VARIAN

Varian, Inc.
2700 Mitchell Drive
Walnut Creek, CA 94598-1675/USA

Agilent Technologies 1100 LC Modules Control

Galaxie Driver Manual

©Varian, Inc. 2002 - 2006

03-914947-30:Rev.6

Table of Contents

Introduction 4

General 4

Installation and Configuration 5

Installing the Driver Software 5
Configuring the HPLC Communications 5
Serial Communications 5
Ethernet Communications 7
Configuring the Driver 10
Configuring the Agilent Technologies LC 1100 Modules 10
Configuring the Agilent Technologies LC 1100 Pumps 14
Configuring the Agilent Technologies LC 1100 Column Compartment 20
Configuring the Agilent Technologies LC 1100 Detectors 22
Configuring the Synopsis 26
Signal Configuration 28

Building a Method 31

Creating a New Method 31
Control Method Section for the Agilent Technologies LC 1100 Modules 34
Control Section for the Agilent LC 1100 AutoSampler (G1313) 36
Control Section for the Agilent LC 1100 Thermostated AutoSampler (G1329) 40
Control Section for the Agilent LC 1100 Well Plate AutoSampler (G1367) 45
Control Section for the Agilent LC 1100 Isocratic Pump (G1310) 51
Control Section for the Agilent LC 1100 Quaternary Pump (G1311) 55
Control Section for the Agilent LC 1100 Binary Pump (G1312) 60
Control Section for the Agilent LC 1100 Column Compartment (G1316) 66
Control Section for the Agilent LC 1100 Variable Wavelength Detector (G1314) 70
Control Section for the Agilent LC 1100 Diode Array Detector (G1315) 76
Control Section for the Agilent LC 1100 Fluorescence Detector (G1321) 82
Control Section for the Agilent LC 1100 Refractive Index Detector (G1362) 89

Starting and Viewing an Acquisition 94

Quick Start and Sequence 94
Quick Start (Single Acquisition) 94
Sequence 96
Running Acquisition Status 97
Viewing a Running Acquisition 97
Status of the Agilent LC 1100 Autosampler (G1313) 97
Status of the Agilent LC 1100 Thermostated Autosampler (G1329) 100
Status of the Agilent LC 1100 Well Plate Autosampler (G1367) 104
Status of the Agilent LC 1100 Isocratic Pump (G1310) 108
Status of the Agilent LC 1100 Quaternary Pump (G1311) 112

Status of the Agilent LC 1100 Binary Pump (G1312) *117*
Status of the Agilent LC 1100 Column Compartment (G1316) *122*
Status of the Agilent LC 1100 Variable Wavelength Detector (G1314) *127*
Status of the Agilent LC 1100 Diode Array Detector (G1315) *131*
Status of the Agilent LC 1100 Fluorescence Detector (G1321) *135*
Status of the Agilent LC 1100 Refractive Index Detector (G1362) *138*

Running Instrument Maintenance Software 143

Performing Maintenance and Diagnosis 143
Diagnostic Section for the Agilent Technologies LC 1100 Modules 144
Maintenance of the Agilent LC 1100 Autosampler (G1313) *144*
Maintenance of the Agilent LC 1100 Quaternary pump (G1311) *152*
Maintenance of the Agilent LC 1100 Diode Array Detector (G1315) and Multiple Wavelength Detector (G1365) *163*

Appendix 178

GPIB Addresses 178
Configuring a Fixed IP Address 180

Introduction

General

This document describes the configuration of the Agilent Technologies 1100 LC Modules drivers. It also explains how to build a control method for these drivers, how to start and view a running acquisition, what actions are available during an analysis and how to diagnose using the Instrument Maintenance Software.

The available drivers are:

Agilent Technologies LC 1100 Isocratic Pump (G1310)

Agilent Technologies LC 1100 Quaternary Pump (G1311)

Agilent Technologies LC 1100 Binary Pump (G1312)

Agilent Technologies LC 1100 AutoSampler (G1313)

Agilent Technologies LC 1100 Variable Wavelength Detector (G1314)

Agilent Technologies LC 1100 Diode Array Detector (G1315)

Agilent Technologies LC 1100 Column Compartment (G1316)

Agilent Technologies LC 1100 Fluorescence Detector (G1321)

Agilent Technologies LC 1100 Thermostated AutoSampler (G1329)

Agilent Technologies LC 1100 Refractive Index Detector (G1362)

Agilent Technologies LC 1100 Well Plate Autosampler (G1367)

Installation and Configuration

Installing the Driver Software

The Galaxie software must already be installed before installing the driver software (refer to the Galaxie CDS Installation Guide).

Configuring the HPLC Communications

Serial Communications

Configuring the communication server

To communicate with the Agilent 1100 modules, a GPIB_Interface or an NI488 communication bus must be configured on the acquisition server.

- The buffer parameters of the GPIB_Interface bus to communicate with the module must be the following:

  TX Buffer: 1024

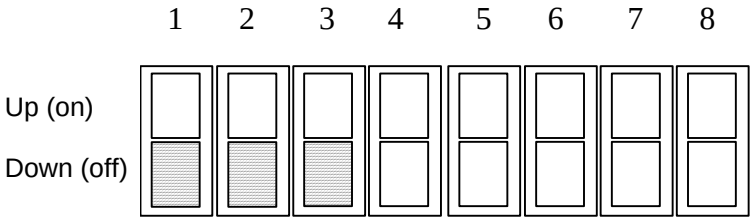
  RX Buffer: 5120

NOTE: For more details about the configuration of a GPIB_Interface or an NI488 bus, refer to the Galaxie Chromatography Data System Installation Guide.

Connecting the Agilent LC 1100 modules to Galaxie

The Galaxie Chromatography Data System uses GPIB to communicate with the Agilent 1100 modules.

For each Agilent 1100 module controlled by Galaxie, a switch located on the rear panel of the instrument must be configured appropriately. For all the modules, the first three switches from left must be turned off (Down Position) for control with Galaxie as for control with HP-CHEMSTATION. Changing the position of these switches must be done with module switched-off.



The module where the GPIB cable is connected should be the detector of the HPLC chain (as recommended by Agilent). This module is called the Master module. The rest of the modules of the HPLC chain communicate through the Master module via CAN cables. The GPIB address entered in each module in the Galaxie Configuration Manager must be the GPIB address of the master module.

Ethernet Communications

The Agilent Technologies 1100 modules can use Ethernet ® as the method of communications for instrument control and for sending digital data to the external data system. Ethernet communication is not standard on the Agilent 1100 chain. The Ethernet connection is made at the back of the 1100 chain. There are two types of Ethernet cables:

- An Ethernet crossover cable is used when the Agilent 1100 chain is connected directly to the Galaxie Acquisition Server PC.

- A standard Ethernet patch cable is used when the Agilent 1100 chain is connected to a company Ethernet network.

The Agilent 1100 modules uses TCP/IP (Transmission Control Protocol / Internet Protocol) to communicate over the Ethernet network and needs to be given a unique IP address to identify the instrument.

A BOOTP Server or a DHCP server is used to send IP addresses to TCP/IP devices.

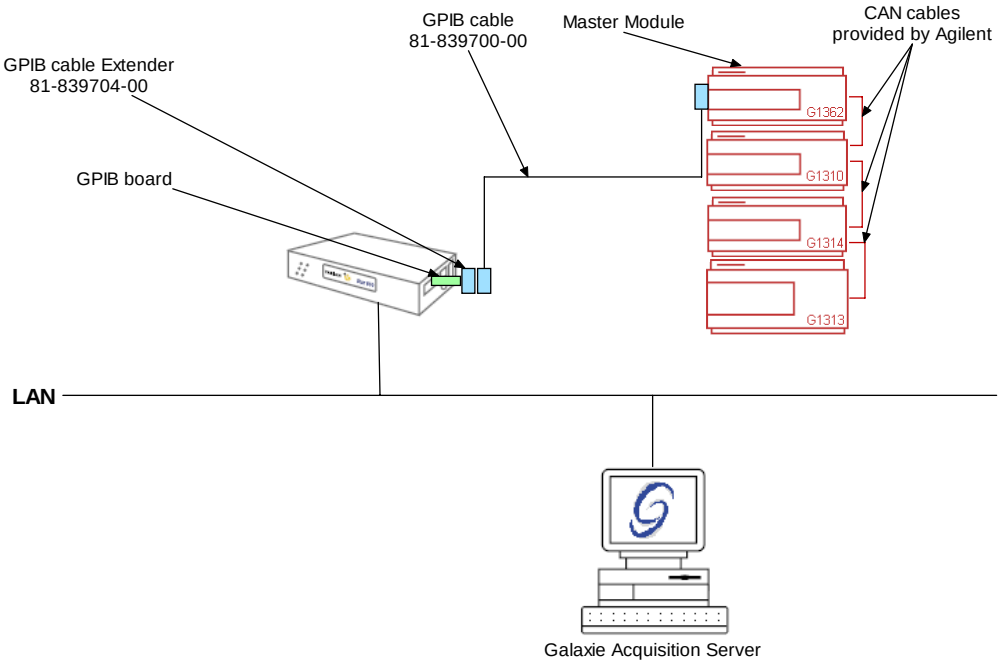
The BOOTP Server lists Ethernet addresses along with the IP addresses that are to be assigned to the corresponding devices.

To known how to configure the BOOTP server, refer to the Galaxie installation Guide.

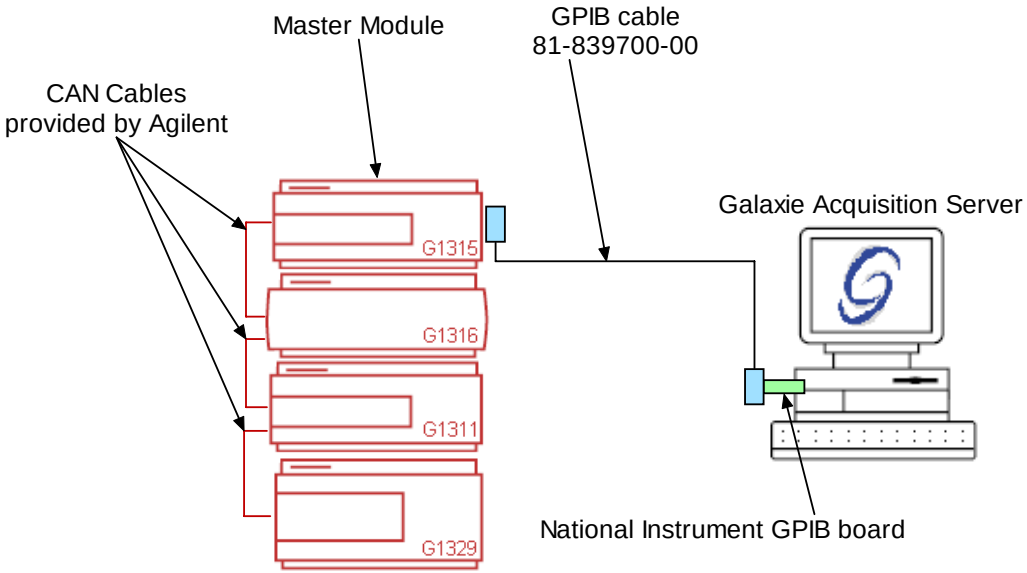
It is also possible to give a fixed IP address to the Agilent 1100 chain. To know how to fix the IP address of the Agilent 1100 chain, refer the appendix Configuring a fixed IP address.

NOTE: The BOOTP server provided by Galaxie is installed during the installation of the Galaxie software.

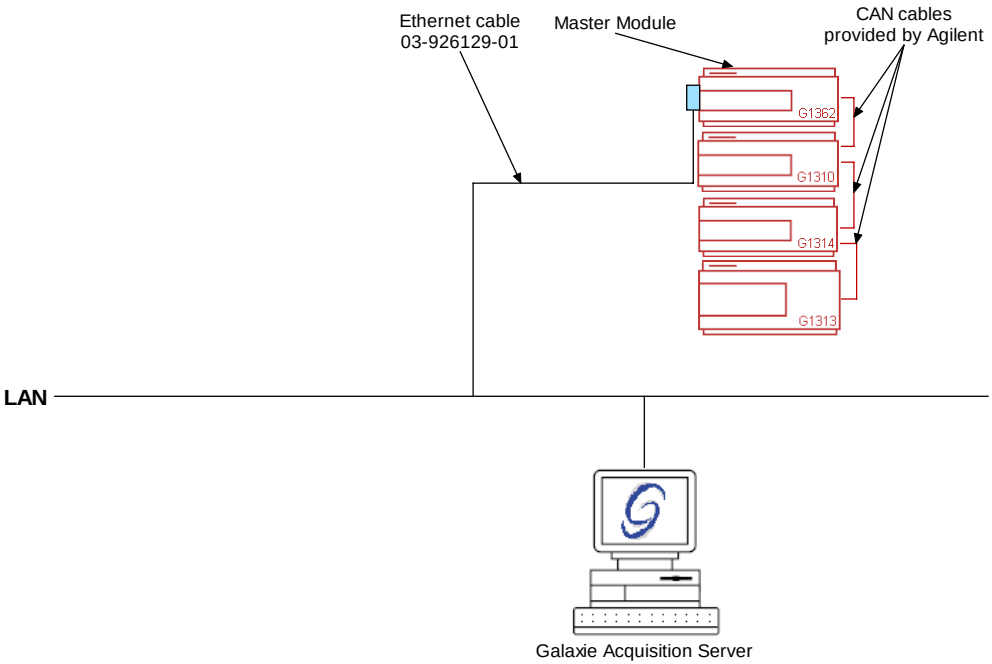
Following are examples of connections between Galaxie and Agilent 1100 modules.



Example 1: Agilent 1100 connected to an 800 MIB with a GPIB board



Example 2: Agilent 1100 connected to a NI GPIB board



Example 3: Agilent 1100 connected to an Ethernet cable

Configuring the Driver

The driver software configuration is done in the Galaxie Configuration Manager when a new chromatographic system is created.

Configuring the Agilent Technologies LC 1100 Modules

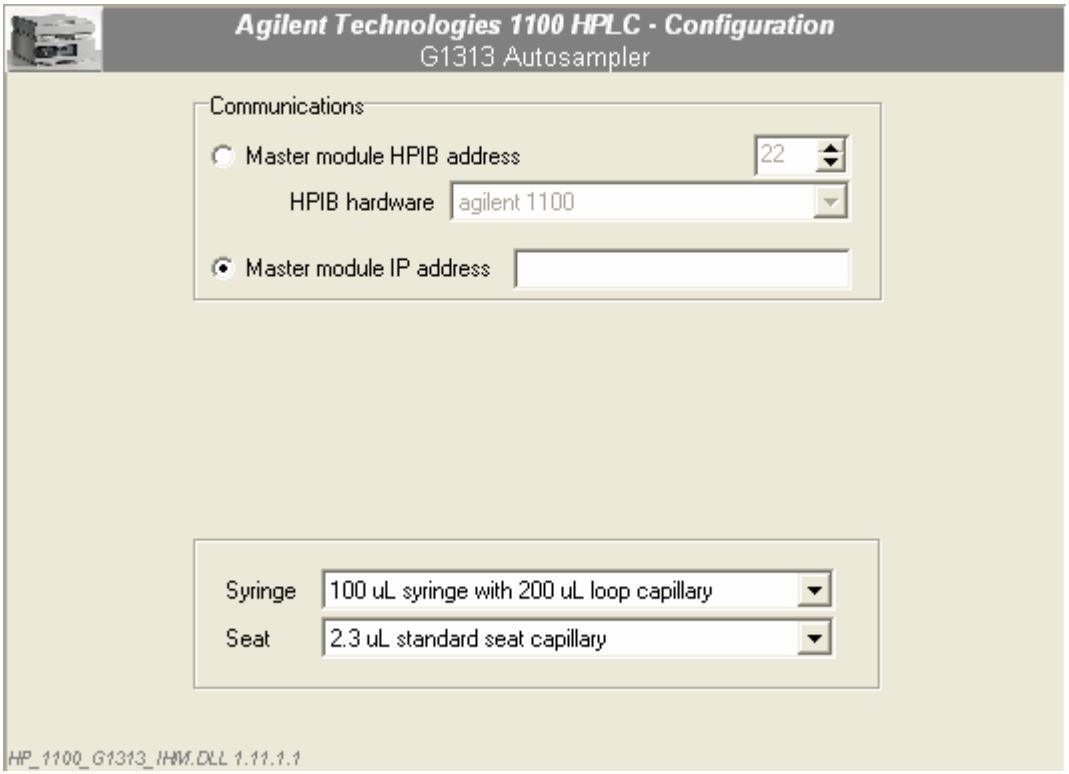
Configuring the Agilent Technologies LC 1100 AutoSamplers

The Agilent Technologies 1100 AutoSampler (G1313), the Agilent Technologies 1100 Thermostated AutoSampler (G1329), and the Agilent Technologies 1100 Well Plate AutoSampler (G1367) are available.

Click on the

button corresponding to the Agilent Technologies 1100 AutoSampler driver and the configuration screen appears.

For the G1313 and G1329 modules, the following screen is displayed:



Communications Parameter Group

Master module HPIB Address:

Select this option if the HPLC chain is controlled via a GPIB communication and enter the GPIB address of the Master module.

NOTE: To check the GPIB address value of the Master module, refer to the *Appendix* at the end of this manual.

HPIB Hardware:

If the HPLC chain is controlled via a GPIB communication, select the name of the bus previously configured in the *HPIB Hardware* scrolling list.

NOTE: For more details about the Bus configuration, refer to the *Configuring the Communication Server* section in this manual.

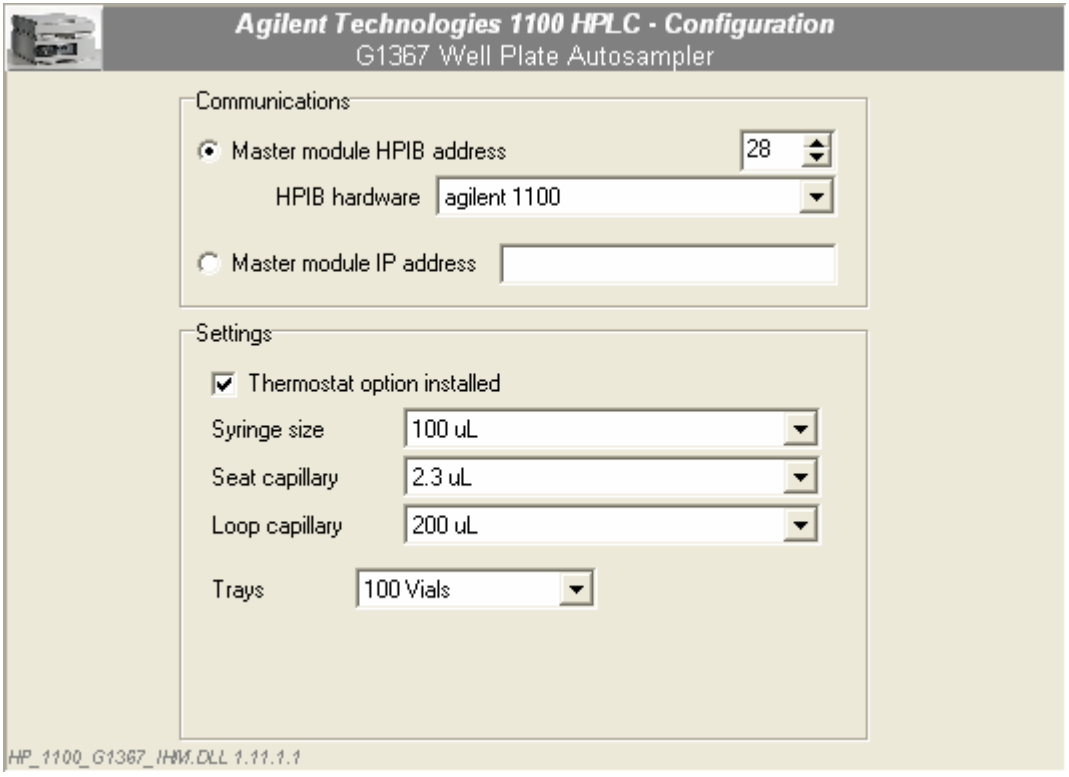
Master module IP Address:

Select this option if the chromatograph is controlled via Ethernet communication and type the IP address of the instrument.

In the *Syringe* scrolling list, select the injector syringe type. Two choices are available: 100 µL syringe with 200 µL loop capillary and 900 µL syringe with 1800 µL loop capillary.

In the *Seat* scrolling list, select the seat type. Five choices are available: 2.3 µL standard seat capillary, 1.2 µL low dispersion and 800 µL, 2800 µL and 8000 µL seat capillary for multiple draw.

For the G1367 module, the following screen is displayed:



Communications Parameter Group

Master module HPIB Address:

Select this option if the HPLC chain is controlled via a GPIB communication and enter the GPIB address of the Master module.

NOTE: To check the GPIB address value of the Master module, refer to the *Appendix* at the end of this manual.

HPIB Hardware:

If the HPLC chain is controlled via a GPIB communication, select the name of the bus previously configured in the *HPIB Hardware* scrolling list.

NOTE: For more details about the Bus configuration, refer to the *Configuring the Communication Server* section in this manual.

Master module IP Address:

Select this option if the chromatograph is controlled via Ethernet communication and type the IP address of the instrument.

Settings Parameter Group

Check the *Thermostat Option installed* check box if the autosampler is thermostated.

In the *Syringe size* scrolling list, select the syringe type. Four choices are available: 8 µL, 40µL, 100 µL or 400 µL.

In the *Seat capillary* scrolling list, select the seat type. Seven choices are available: 0.3 µL, 0.7 µL, 1.2 µL, 2.3 µL, 400 µL, 1400 µL or 5000 µL.

In the *Loop capillary* scrolling list, select the Loop type. Four choices are available: 8 µL, 80 µL, 200 µL and 1800 µL.

In the *Trays* scrolling lists, select the type of trays installed in the autosampler. Five choices are available: None, 15 vials, 40 vials, 100 vials and Well Plate.

In the *Plates X* scrolling lists, select the type of plates installed in the Well Plate tray.

Configuring the Agilent Technologies LC 1100 Pumps

The Agilent Technologies 1100 Isocratic Pump (G1310), the Agilent Technologies 1100 Quaternary Pump (G1311) and the Agilent Technologies 1100 Binary Pump (G1312) are available.

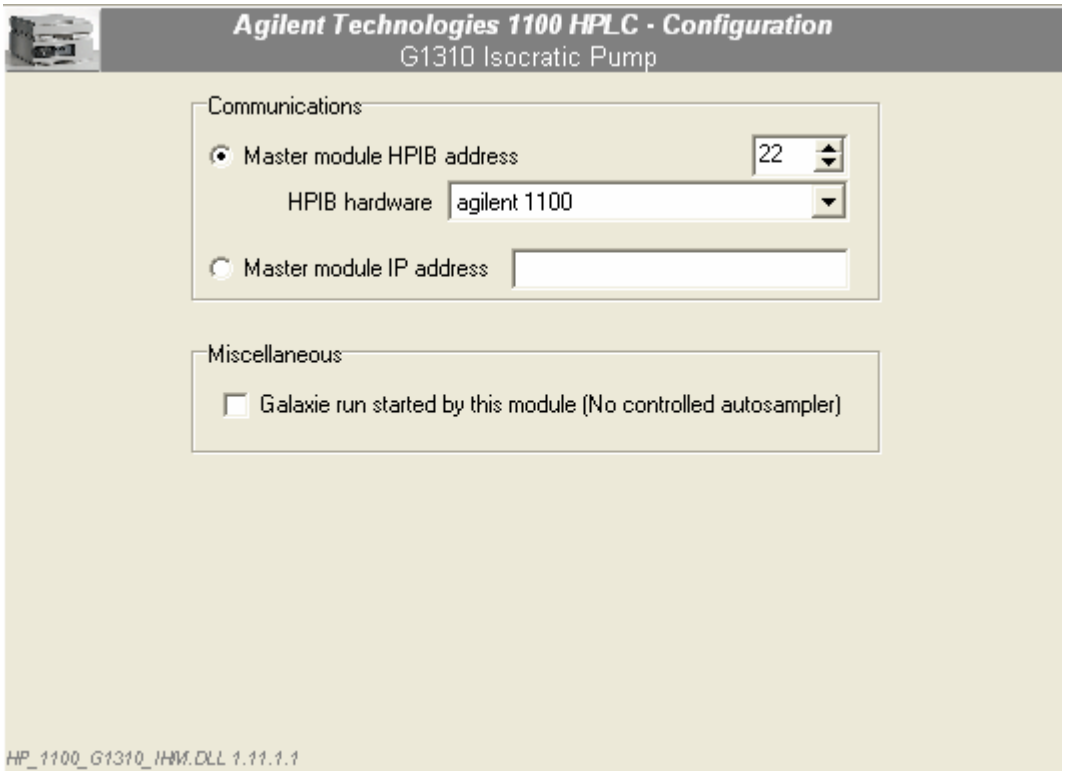
Click on the

,

or

button according to the pump type to display the configuration screen.

For the G1310, the following screen is displayed:



Communications Parameter Group

Master module HPIB Address:

Select this option if the HPLC chain is controlled via a GPIB communication and enter the GPIB address of the Master module.

NOTE: To check the GPIB address value of the Master module, refer to the *Appendix* at the end of this manual.

HPIB Hardware:

If the HPLC chain is controlled via a GPIB communication, select the name of the bus previously configured in the *HPIB Hardware* scrolling list.

NOTE: For more details about the Bus configuration, refer to the *Configuring the Communication Server* section in this manual.

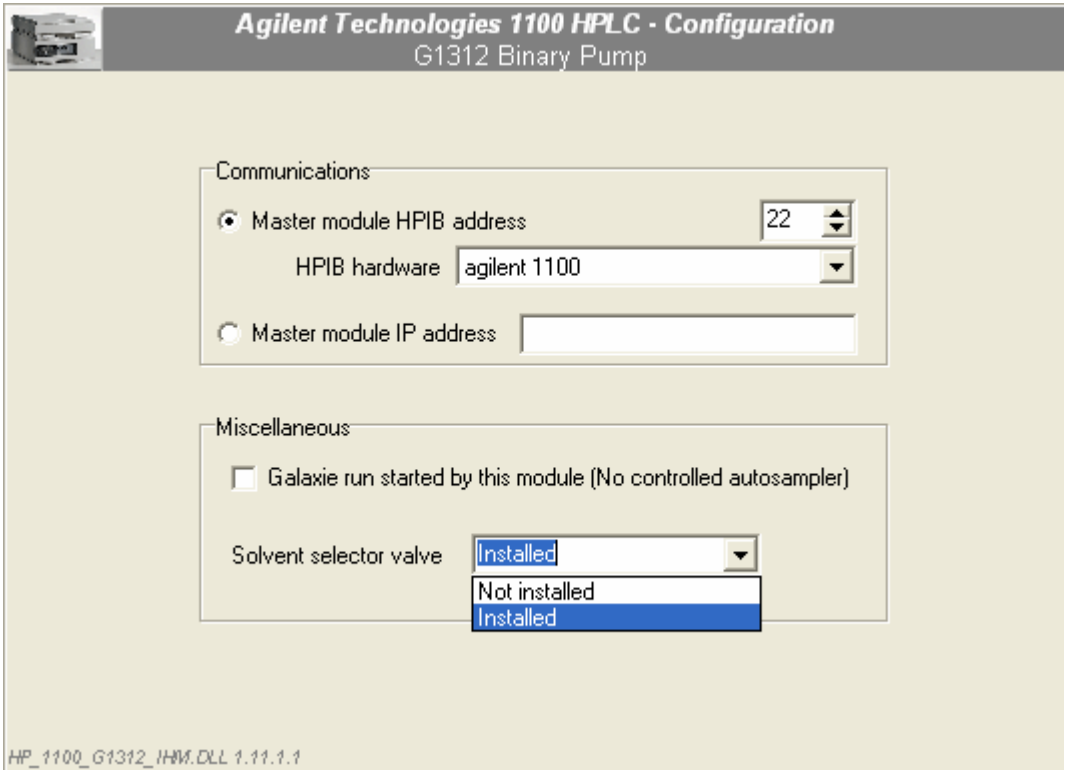
Master module IP Address:

Select this option if the chromatograph is controlled via Ethernet communication and type the IP address of the instrument.

Miscellaneous Parameter Group

Check or uncheck the *Galaxie run started by this module (No controlled autosampler)* check box. This box should be checked if a non-controlled autosampler present in the system is cabled to this module to give a start signal to the 1100 module. The Galaxie run will start as soon as this module is started.

For the G1312 module, the following screen is displayed:



Communications Parameter Group

Master module HPIB Address:

Select this option if the HPLC chain is controlled via a GPIB communication and enter the GPIB address of the Master module.

NOTE: To check the GPIB address value of the Master module, refer to the *Appendix* at the end of this manual.

HPIB Hardware:

If the HPLC chain is controlled via a GPIB communication, select the name of the bus previously configured in the *HPIB Hardware* scrolling list.

NOTE: For more details about the Bus configuration, refer to the *Configuring the Communication Server* section in this manual.

Master module IP Address:

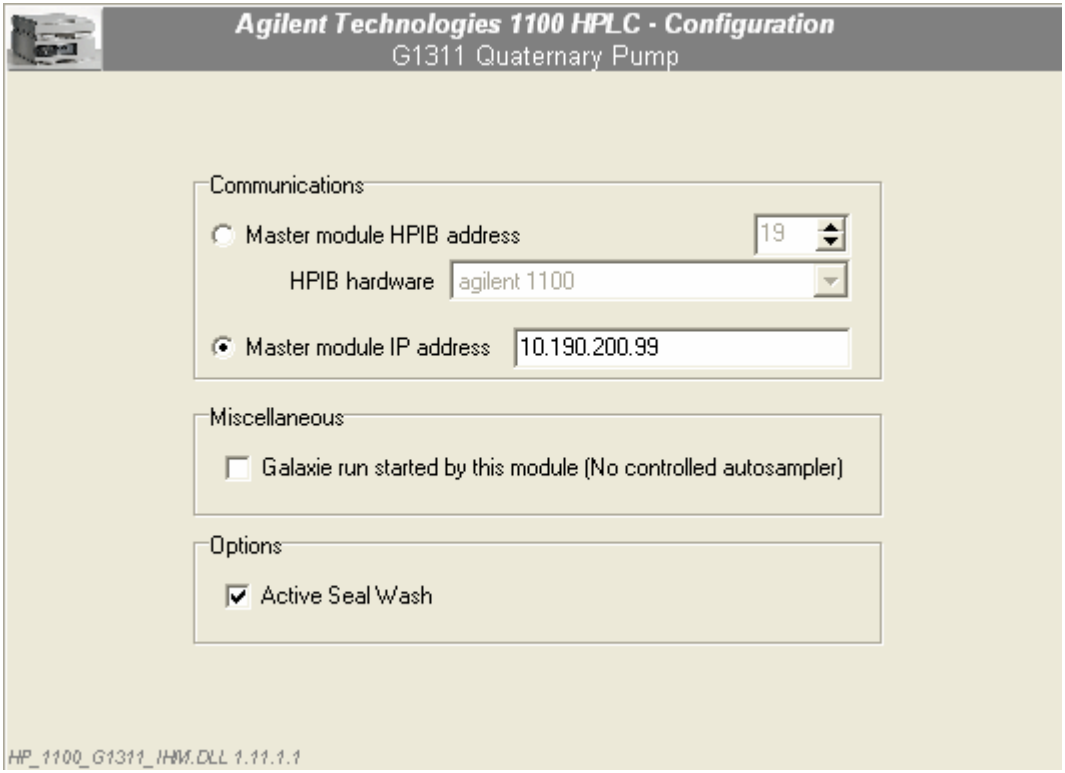
Select this option if the chromatograph is controlled via Ethernet communication and type the IP address of the instrument.

Miscellaneous Parameter Group

Check or uncheck the *Galaxie run started by this module (No controlled autosampler)* check box. This box should be checked if a non-controlled autosampler present in the system is cabled to this module to give a start signal to the 1100 module. The Galaxie run will start as soon as this module is started.

Solvent selector valve: Choose *Installed* if a solvent selection valve is installed. The solvent selection valve (optional) permits to select a binary mixture (isocratic and gradient) from four independent solvent bottles.

For the G1311 module, the following screen is displayed:



Communications Parameter Group

Master module HPIB Address:

Select this option if the HPLC chain is controlled via a GPIB communication and enter the GPIB address of the Master module.

NOTE: To check the GPIB address value of the Master module, refer to the *Appendix* at the end of this manual.

HPIB Hardware:

If the HPLC chain is controlled via a GPIB communication, select the name of the bus previously configured in the *HPIB Hardware* scrolling list.

NOTE: For more details about the Bus configuration, refer to the *Configuring the Communication Server* section in this manual.

Master module IP Address:

Select this option if the chromatograph is controlled via Ethernet communication and then type the IP address of the instrument.

Miscellaneous Parameter Group

Check or uncheck the *Galaxie run started by this module (No controlled autosampler)* check box. This box should be checked if a non-controlled autosampler present in the system is cabled to this module to give a start signal to the 1100 module. The Galaxie run will start as soon as this module is started.

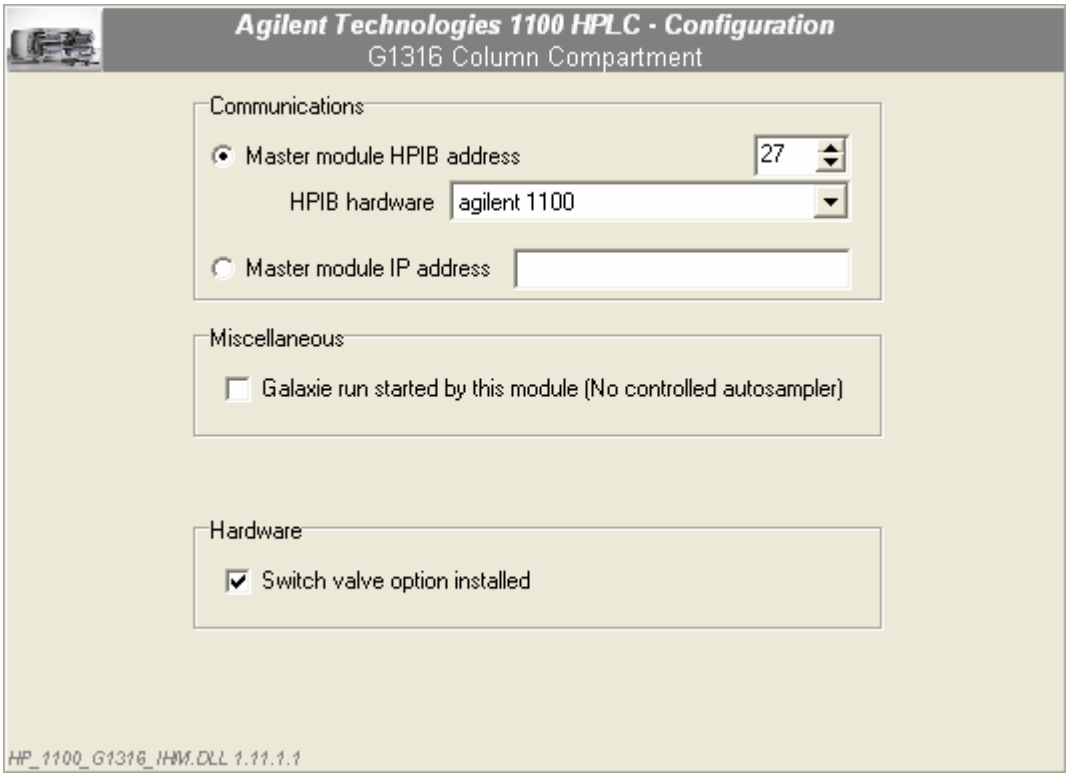
Options Parameter Group

Check the *Active Seal Wash* box if the Active Seal Wash option is installed on the pump. In order to preserve the seal, the seal wash option permits to wash the back side of the seal.

Configuring the Agilent Technologies LC 1100 Column Compartment

Click on the

button to display the configuration screen:



Communications Parameter Group

Master module HPIB Address:

Select this option if the HPLC chain is controlled via a GPIB communication and enter the GPIB address of the Master module.

NOTE: To check the GPIB address value of the Master module, refer to the *Appendix* at the end of this manual.

HPIB Hardware:

If the HPLC chain is controlled via a GPIB communication, select the name of the bus previously configured in the *HPIB Hardware* scrolling list.

NOTE: For more details about the Bus configuration, refer to the *Configuring the Communication Server* section in this manual.

Master module IP Address:

Select this option if the chromatograph is controlled via Ethernet communication and type the IP address of the instrument.

Miscellaneous Parameter Group

Check or uncheck the *Galaxie run started by this module (No controlled autosampler)* check box. This box should be checked if a non-controlled autosampler present in the system is cabled to this module to give a start signal to the 1100 module. The Galaxie run will start as soon as this module is started.

Hardware Parameter Group

Check the *Switch valve option installed* check box if a switch valve is present in the module.

Configuring the Agilent Technologies LC 1100 Detectors

The Agilent Technologies 1100 Variable Wavelength Detector (G1314), the Agilent Technologies 1100 Diode Array Detector (G1315), the Agilent Technologies 1100 Fluorescence Detector (G1321) and the Agilent Technologies 1100 Refractive Index Detector (G1362) are available.

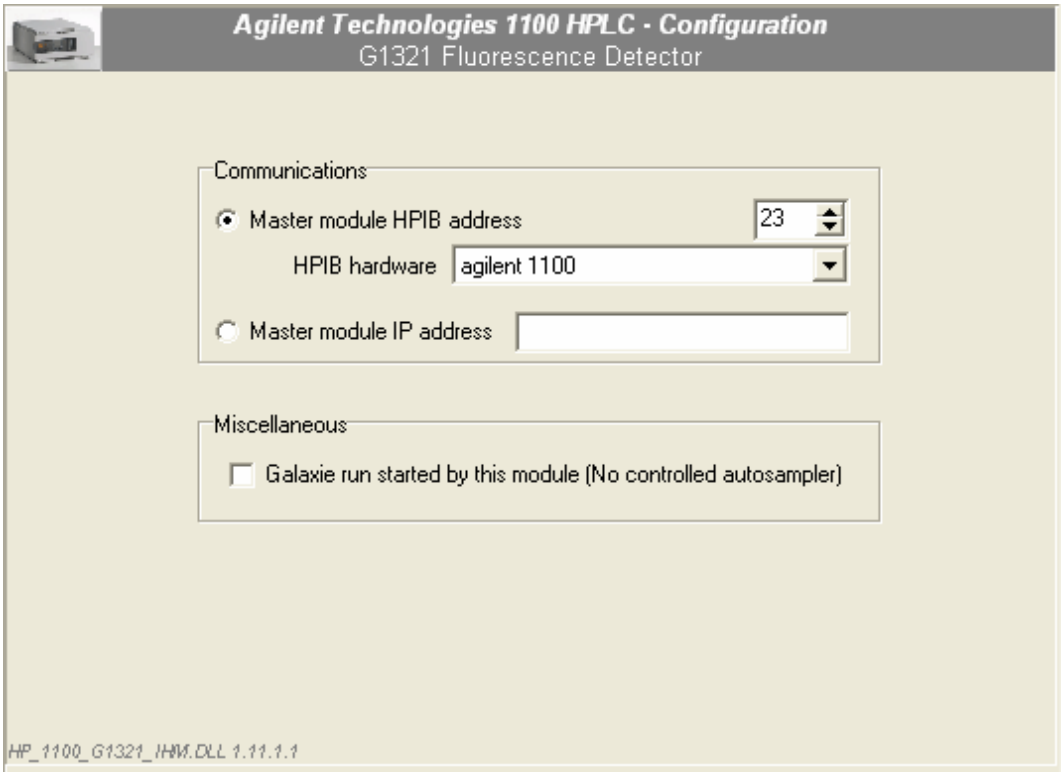
Click on the

or

or

or

button according to the detector type to display the configuration screen. The same screen is displayed for the G1314, G1362 and G1321 modules:



Communications Parameter Group

Master module HPIB Address:

Select this option if the HPLC chain is controlled via a GPIB communication and enter the GPIB address of the Master module.

NOTE: To check the GPIB address value of the Master module, refer to the *Appendix* at the end of this manual.

HPIB Hardware:

If the HPLC chain is controlled via a GPIB communication, select the name of the bus previously configured in the *HPIB Hardware* scrolling list.

NOTE: For more details about the Bus configuration, refer to the *Configuring the Communication Server* section in this manual.

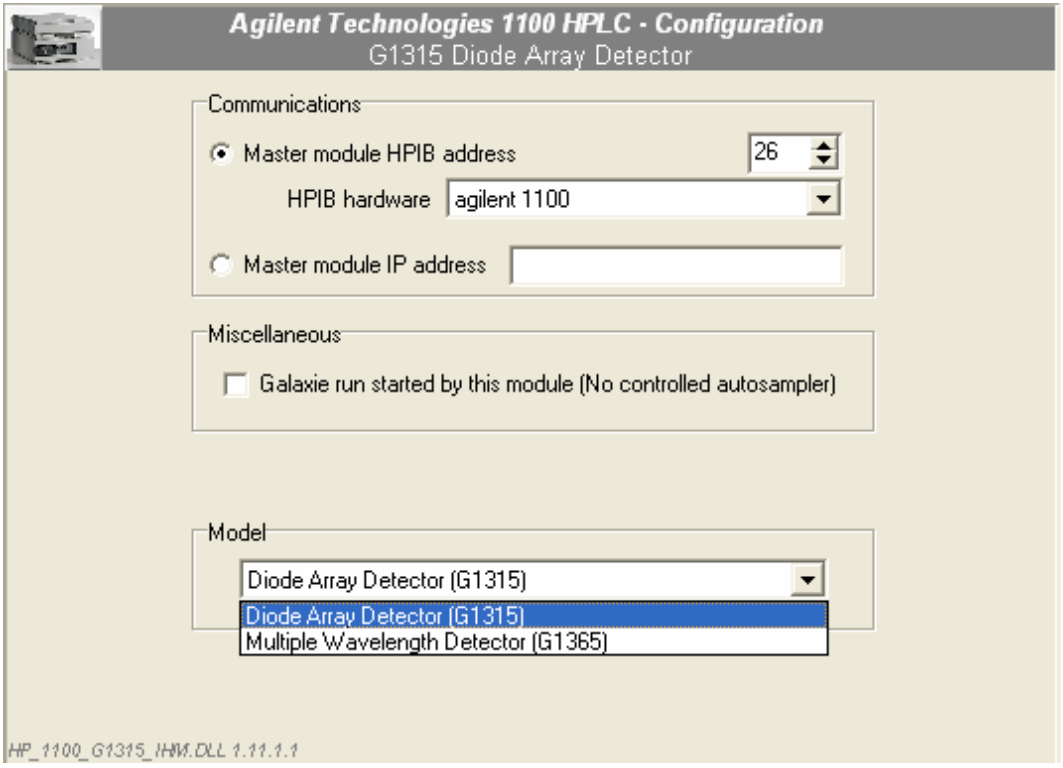
Master module IP Address:

Select this option if the chromatograph is controlled via Ethernet communication and type the IP address of the instrument.

Miscellaneous Parameter Group

Check or uncheck the *Galaxie run started by this module (No controlled autosampler)* check box. This box should be checked if a non-controlled autosampler present in the system is cabled to this module to give a start signal to the 1100 module. The Galaxie run will start as soon as this module is started.

For the G1315 module, the following screen is displayed:



Communications Parameter Group

Master module HPIB Address:

Select this option if the HPLC chain is controlled via a GPIB communication and enter the GPIB address of the Master module.

NOTE: To check the GPIB address value of the Master module, refer to the *Appendix* at the end of this manual.

HPIB Hardware:

If the HPLC chain is controlled via a GPIB communication, select the name of the bus previously configured in the *HPIB Hardware* scrolling list.

NOTE: For more details about the Bus configuration, refer to the *Configuring the Communication Server* section in this manual.

Master module IP Address:

Select this option if the chromatograph is controlled via Ethernet communication and type the IP address of the instrument.

Miscellaneous Parameter Group

Check or uncheck the *Galaxie run started by this module (No controlled autosampler)* check box. This box should be checked if a non-controlled autosampler present in the system is cabled to this module to give a start signal to the 1100 module. The Galaxie run will start as soon as this module is started.

Model Parameter Group

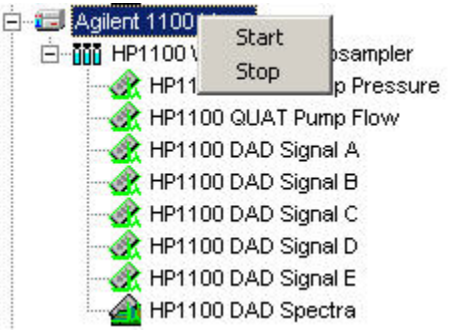
Select in the scrolling list the model of the current detector: *Diode Array Detector (G1315)* or *Multiple Wavelength Detector (G1365)* are available.

Configuring the Synopsis

In the *Overview* part of the system configuration, a synopsis can be defined for the system. This synopsis depends on the configured devices.

1. To save the configuration of these devices, click on the *OK* button.

2. Right click on the system name in the bottom part of the ***Galaxie Configuration Manager*** screen. A pop-up menu appears: click on *Stop.* Then right click on the system name again, and click on *Start*.



3. Go back to the System Configuration screen (***Properties*** wizard). A graphic of the devices that comprise the system is displayed in the synopsis screen. To configure the synopsis as the real instrument configuration, move each module, and then connect it appropriately. To do this, select one anchor for each of the two modules (the selected anchors become red) and click on the button; a connection tube will appear between the two anchors.

   Click on the to delete a selected tube, click on the buttons to delete all the tubes.

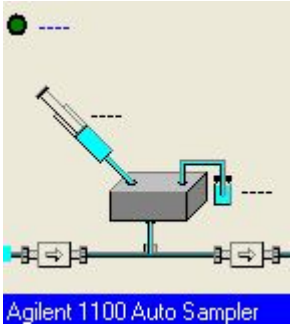
   Click on to define a background color, or on to make the background transparent.

   Click on the icon to change the grid color.

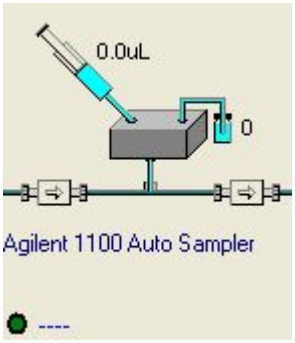
4. Once the synopsis configuration is complete, it will be displayed in the Galaxie Chromatography Data System, in the *Systems* tab. In this tab, the *Overview* part will show the synopsis of the system with some parameters displayed

(temperature, flow, signal, etc.) depending on the installed devices.

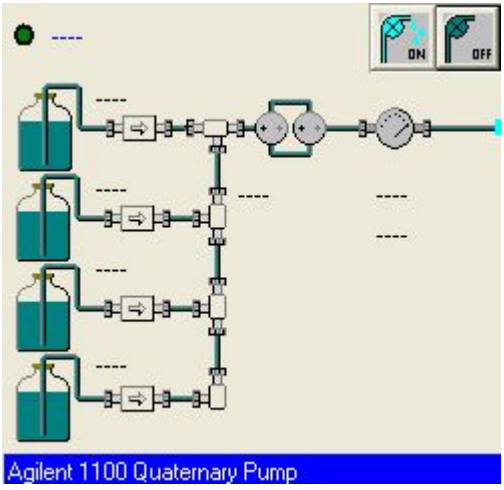
For example, the following pictures represent the synopsis of the Agilent 1100 modules:



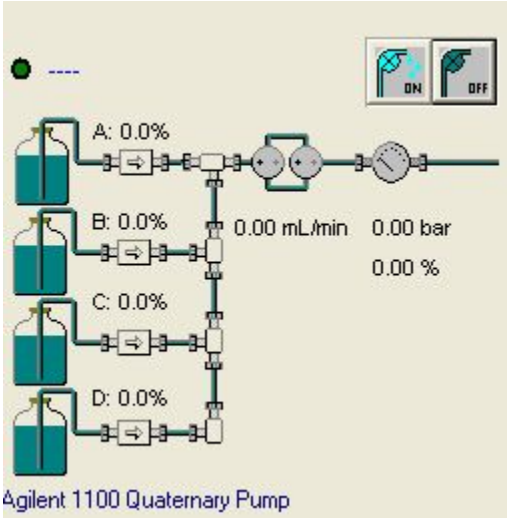
Agilent 1100 autosamplers Galaxie Configuration Manager Screen



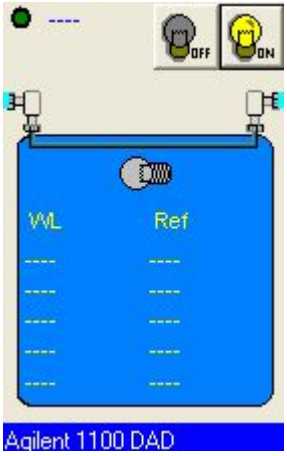
Agilent 1100 autosamplers Galaxie Chromatography Data System Screen



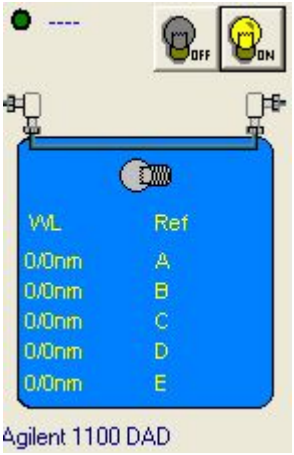
Agilent 1100 pumps Galaxie Configuration Manager Screen



Agilent 1100 pumps Galaxie Chromatography Data System Screen



Agilent 1100 detectors Galaxie Configuration Manager Screen



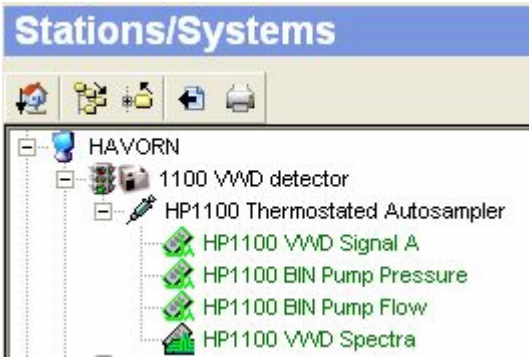
Agilent 1100 detectors Galaxie Chromatography Data System Screen

Signal Configuration

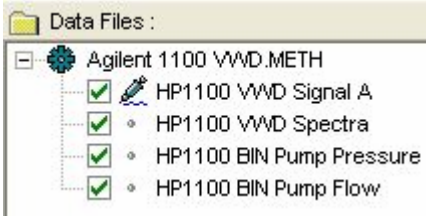
With all the detectors except with the Agilent Technologies 1100 Refractive Index Detector, it is possible to use several channels, up to six chromatographic signals with the Agilent Technologies 1100 Diode Array Detector G1315A.

The example given below for the Agilent Technologies 1100 Diode Array Detector G1315A explains how to disconnect channels. The way to proceed is the same for all detectors.

In the Configuration Manager, the system is displayed as shown below:

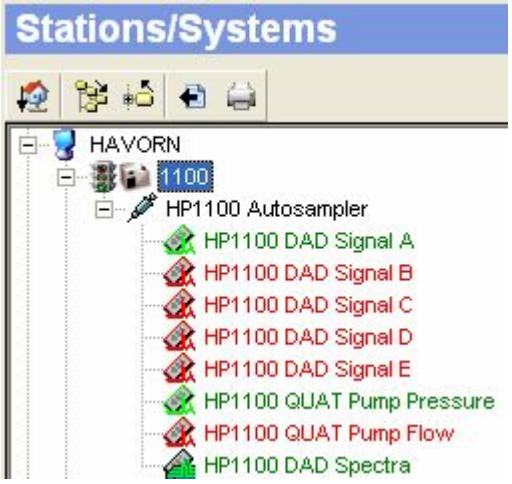


The method created on this system will have the following structure:



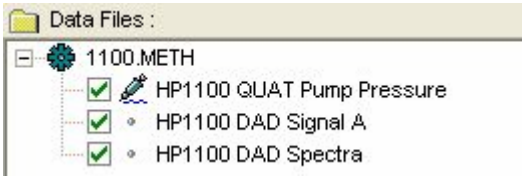
However, if some of these signals are NEVER used, it is possible to disconnect them.

For instance, in the ***Galaxie Configuration Manager***, a system has the following configuration:

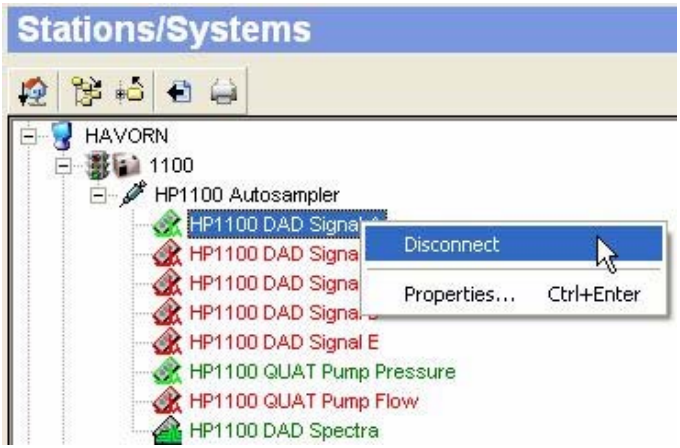


The icon indicates that the corresponding channel is activated.
The icon indicates that the corresponding channel is deactivated.

The methods created on this system will have the following structure:



1. To deactivate a channel, just right click on the channel and select *Disconnect* in the pop-up menu:



2. Right click on the system name in the bottom part of the ***Galaxie Configuration Manager*** screen. A pop-up menu appears: click on *Stop*. Then right click on the system name again, and click on *Start*.

NOTE: Once the system has been created and correctly configured, it must be associated with one or more projects in order to start some acquisitions. For more details about the creation and configuration of a system, refer to the Galaxie Configuration Manager User's Guide.

Press the button to print the current configuration (not applicable to this driver).

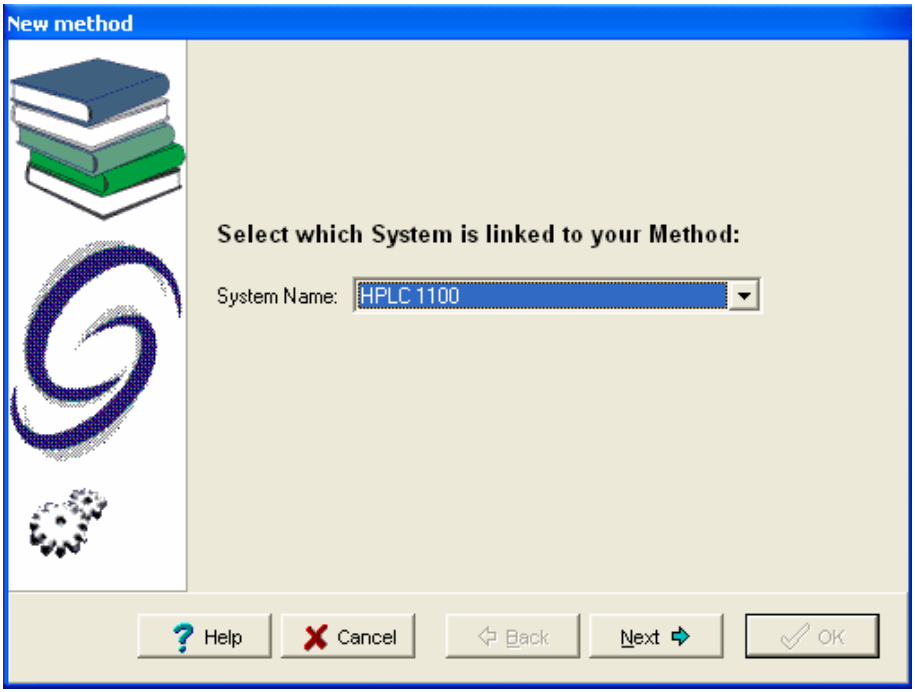
Building a Method

Creating a New Method

The method contains parameters for instrument control, data acquisition, chromatogram processing, and editing of final results. To initially set up a method, it is not necessary to define all of the sub-method sections; however, you must fill in the instrument control section prior to starting an acquisition.

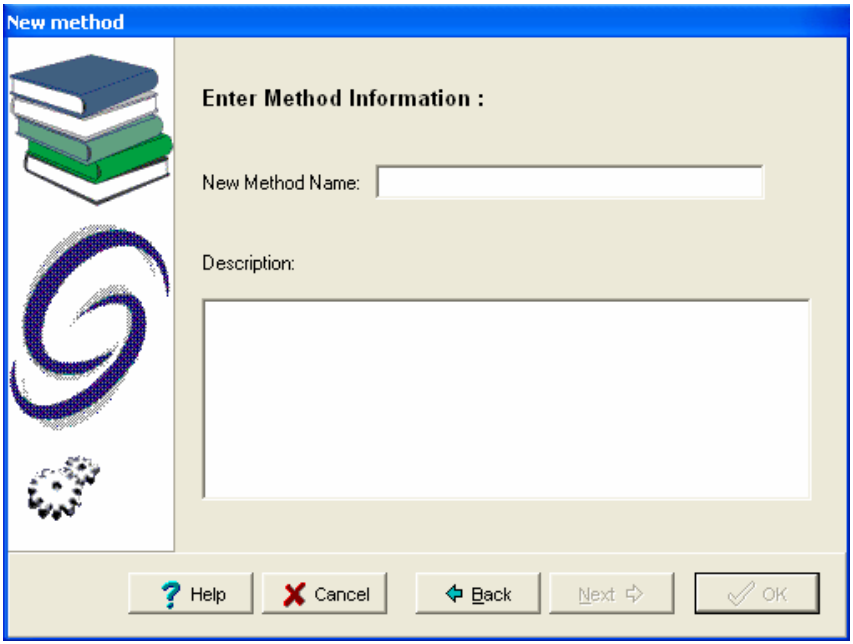
1. To create a new method, select the ***FILE / NEW METHOD*** option from the Galaxie Chromatography Data System main menu.

   A wizard guide will appear and provide assistance during the first steps of method creation:



2. Choose the system (chromatograph) associated with the method. A method is created for a particular system. When starting an acquisition, the name of the system that performs the acquisition must be correct, since method access is limited only to those methods associated with this system.

3. Once this field is completed, click on the *Next* button to move to the second step of the method creation:



4. Enter the *New Method Name* in the first field. In the *Description* field, enter information concerning the method (optional).

5. Once these two fields have been completed, click on the *OK* button. The new method is created and is opened with default parameters in the Galaxie Chromatography Data System. The next step is the definition of each of the method sections.

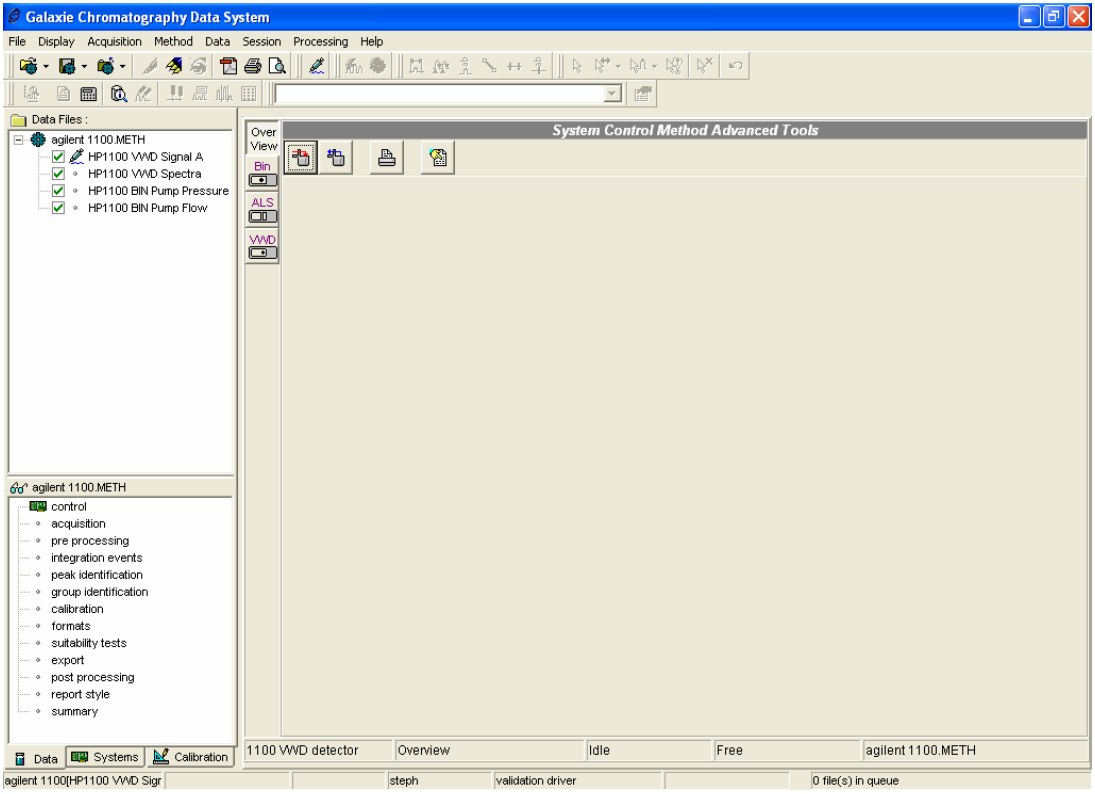
   The control section must be defined in order to start an acquisition. In the following part of this guide, only the control section for the Agilent Technologies 1100 LC Modules is detailed. Other parameters such as *Injection Volume*, *Vial* and *Rack* number may be necessary and are defined in the acquisition section.

NOTE: For more details about the programming of each method section, turn to the Galaxie Chromatography Data System User's Guide.

Control Method Section for the Agilent Technologies LC 1100 Modules

Once the new method is created, select the control section in the lower part of the browser.

The following screen appears:



Press the Over View button to display the ***System Control Method Advanced Tools*** window:

to send the current method to the instrument (not applicable to these drivers)

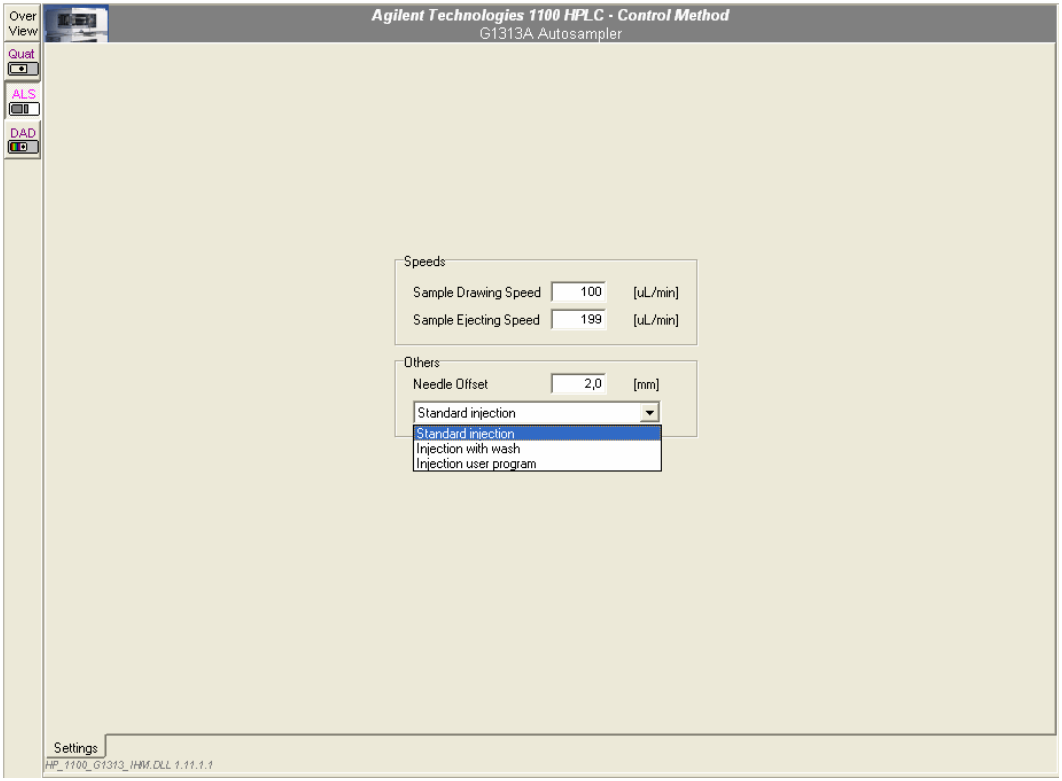
to get the active method from the instrument (not applicable to these drivers)

to print the current method (not applicable to these drivers)

Control Section for the Agilent LC 1100 AutoSampler (G1313)

Click on the

button to display the Agilent Technologies 1100 AutoSampler (G1313) control method section and to define the corresponding parameters that will be used during the chromatographic run.



Speeds Parameter Group

In the *Sample Drawing Speed* field, enter the sample aspiration speed value.

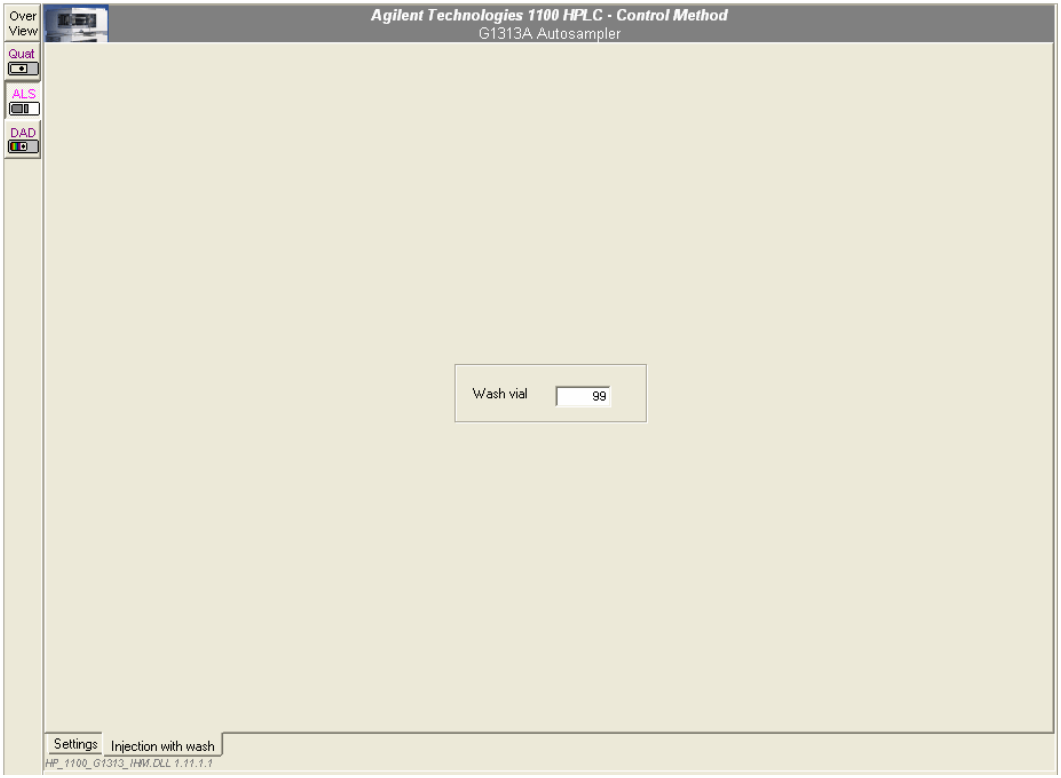
In the *Sample Ejecting Speed* field, enter the sample injection speed value.

Others Parameter Group

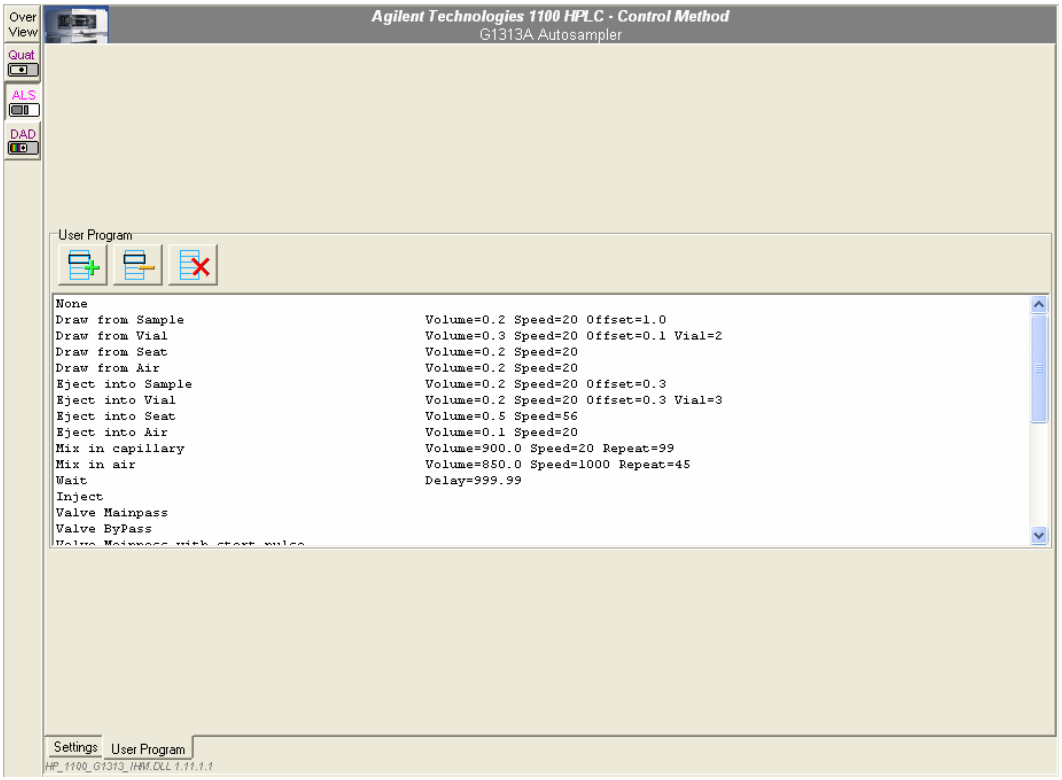
In the *Needle Offset* field, enter the vertical needle offset value.

Select the injection mode in the scrolling list. Three choices are available: Standard injection, Injection with wash and Injection user program.

- Standard injection: only the default screen is displayed. No other parameters are displayed.
- Injection with wash: when selecting this injection mode, another tab is displayed allowing the user to define the *Wash vial*.



- Injection user program: when selecting this injection mode, another tab is displayed allowing you to program different actions.



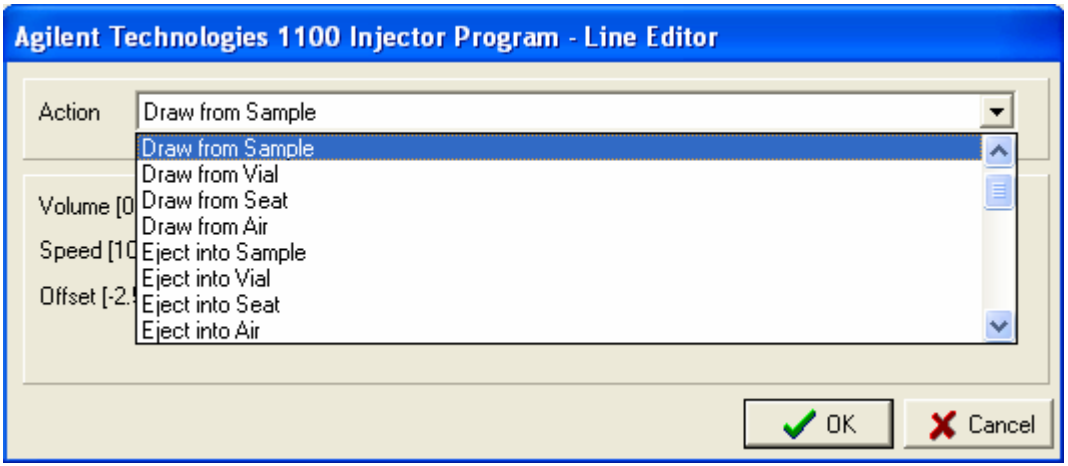
Use the following buttons to edit the table:

to add a line to the table.

to delete a line in the table.

to clear the entire table.

After a new line has been added, double-click on it to edit. A new window is displayed:



Use the scrolling list to choose the action to program. The available actions are:

Draw from Sample
Draw from Vial
Draw from Seat
Draw from Air
Eject into Sample
Eject into Vial
Eject into Seat
Eject into Air
Mix in capillary
Mix in air
Wait
Inject
Valve Mainpass
Valve Bypass
Valve Mainpass with start pulse
Valve Mainpass for a time, needle in sample vial
Valve Mainpass for a time, needle in vial
Valve Mainpass for a time, needle in seat
Move Needle to uppermost position
Move Needle to seat
Move Needle to sample vial
Move Needle to vial
Move Syringe back
Move Syringe forth

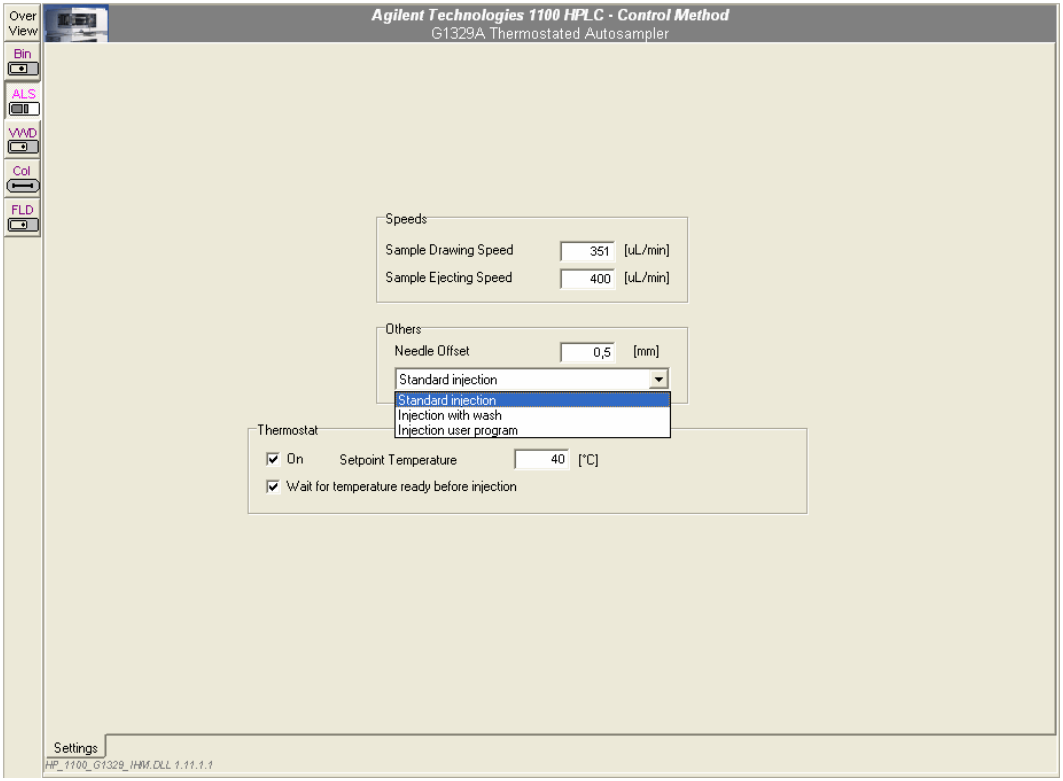
Move Syringe back and forth
Move Syringe home
Move Syringe service
Move vial to new location

Depending on the selected action, the parameters to fill in will be different.

Control Section for the Agilent LC 1100 Thermostated AutoSampler (G1329)

Click on the

button to display the Agilent Technologies 1100 Thermostated AutoSampler (G1329) control method section and to define the corresponding parameters that will be used during the chromatographic run.



Speeds Parameter Group

In the *Sample Drawing Speed* field, enter the sample aspiration speed value.

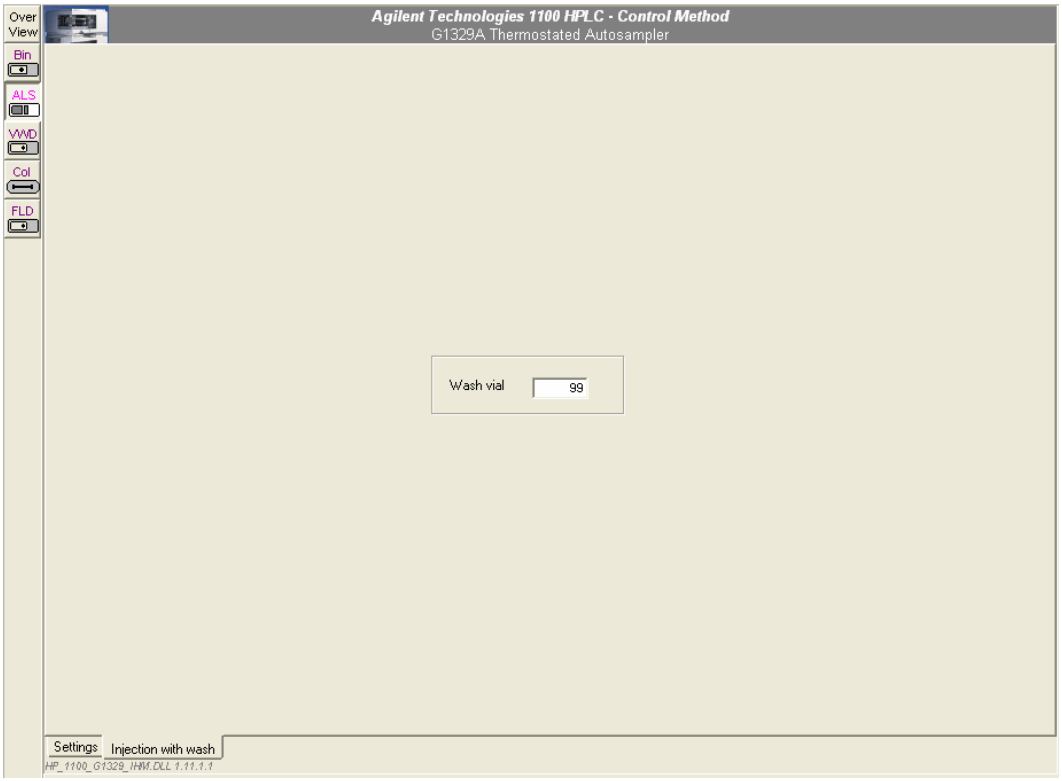
In the *Sample Ejecting Speed* field, enter the sample injection speed value.

Others Parameter Group

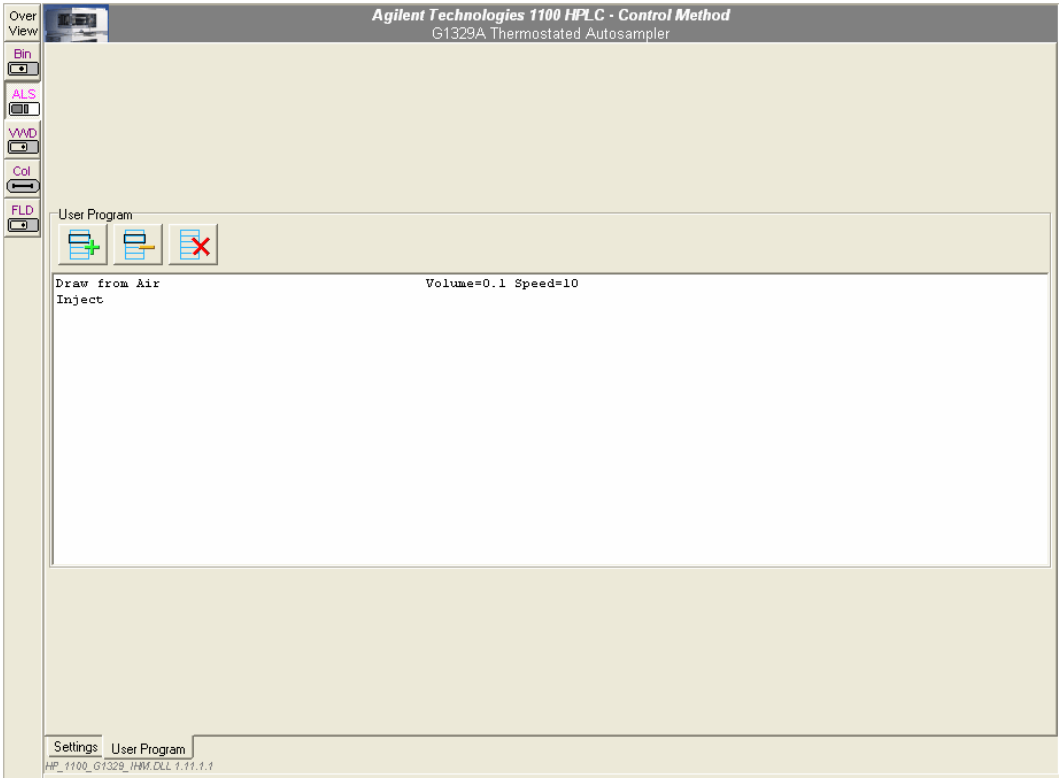
In the *Needle Offset* field, enter the vertical needle offset value.

Select the injection mode in the scrolling list. Three choices are available: Standard injection, Injection with wash and Injection user program.

- Standard injection: only the default screen is displayed. No other parameters are displayed.
- Injection with wash: when selecting this injection mode, another tab is displayed allowing the user to define the *Wash vial*.



- Injection user program: when selecting this injection mode, another tab is displayed allowing the user to program different actions.



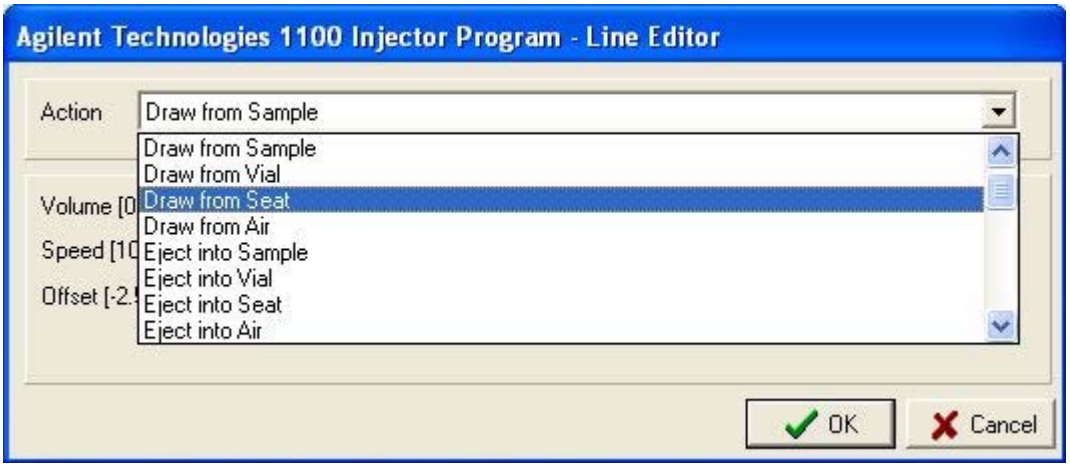
Use the following buttons to edit the table:

to add a line to the table.

to delete a line in the table.

to clear the entire table.

After a new line has been added, double-click on it to edit. A new window is displayed:



Use the scrolling list to choose the action to program. The available actions are:

Draw from Sample
Draw from Vial
Draw from Seat
Draw from Air
Eject into Sample
Eject into Vial
Eject into Seat
Eject into Air
Mix in capillary
Mix in air
Wait
Inject
Valve Mainpass
Valve Bypass
Valve Mainpass with start pulse
Valve Mainpass for a time, needle in sample vial
Valve Mainpass for a time, needle in vial
Valve Mainpass for a time, needle in seat
Move Needle to uppermost position
Move Needle to seat
Move Needle to sample vial
Move Needle to vial
Move Syringe back
Move Syringe forth
Move Syringe back and forth
Move Syringe home
Move Syringe service
Move vial to new location

Depending on the selected action, the parameters to fill in will be different.

Thermostat parameter group:

Check the *On* box to activate the autosampler temperature regulation.

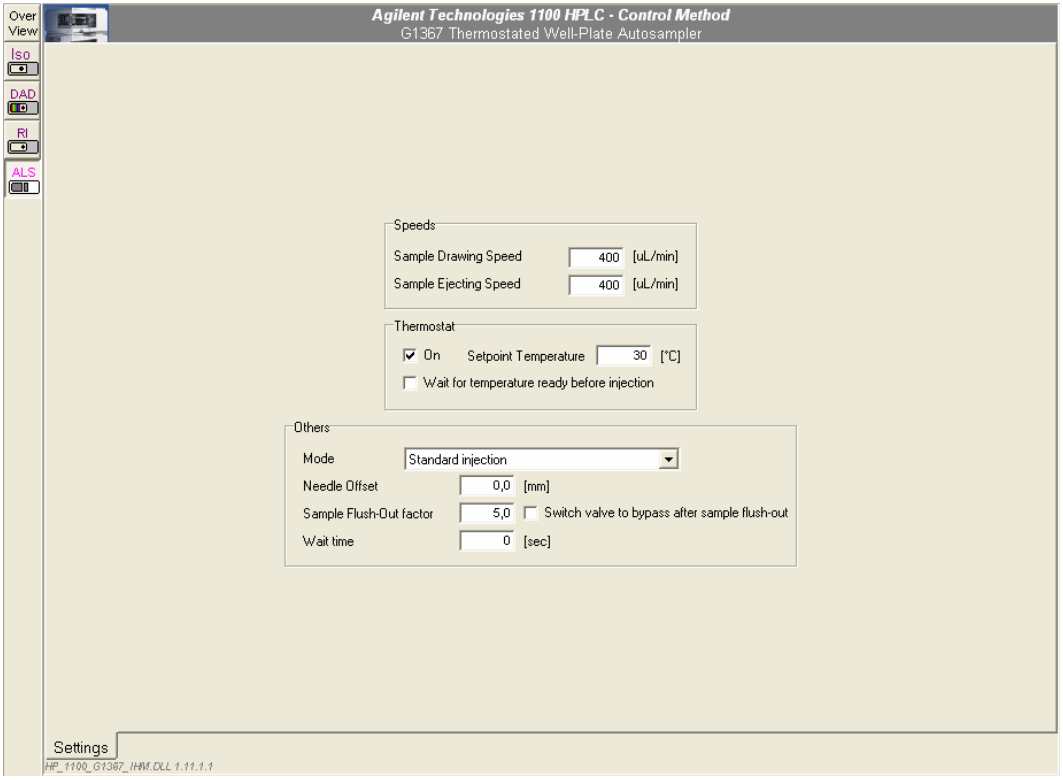
Enter the setpoint temperature for the thermostat autosampler in the *Setpoint Temperature* field.

Check *Wait for temperature ready before injection* if necessary.

Control Section for the Agilent LC 1100 Well Plate AutoSampler (G1367)

Click on the

button to display the Agilent Technologies 1100 Well Plate AutoSampler (G1367) control method section and to define the corresponding parameters that will be used during the chromatographic run.



Speeds Parameter Group

In the *Sample Drawing Speed* field, enter the sample aspiration speed value.

In the *Sample Ejecting Speed* field, enter the sample injection speed value.

Thermostat Parameter Group

Check the *On* box to activate the autosampler temperature regulation.

Enter the setpoint temperature for the thermostat autosampler in the *Setpoint Temperature* field.

Check *Wait for temperature ready before injection* if necessary.

Others Parameter Group

In the *Needle Offset* field, enter the vertical needle offset value.

In the *Sample Flush-Out factor* field, enter the flush out factor value that specifies the volume of mobile phase pumped through the injector after each injection.

Check *Switch valve to bypass after sample flush-out* to leave the valve in the bypass position even past analysis.

In the *Wait time* field, enter the wait time after drawing value.

Select the injection mode in the scrolling list. Three choices are available: Standard injection, Injection with wash and Injection user program.

- Standard injection: only the default screen is displayed. No other parameters are displayed.

- Injection with wash: when selecting this injection mode, another tab is displayed allowing the user to define multiple parameters.

  Select in the drop down list the type wash. Three choices are available: Wash needle in flush port, Wash needle in wash vial, and Flush the seat.

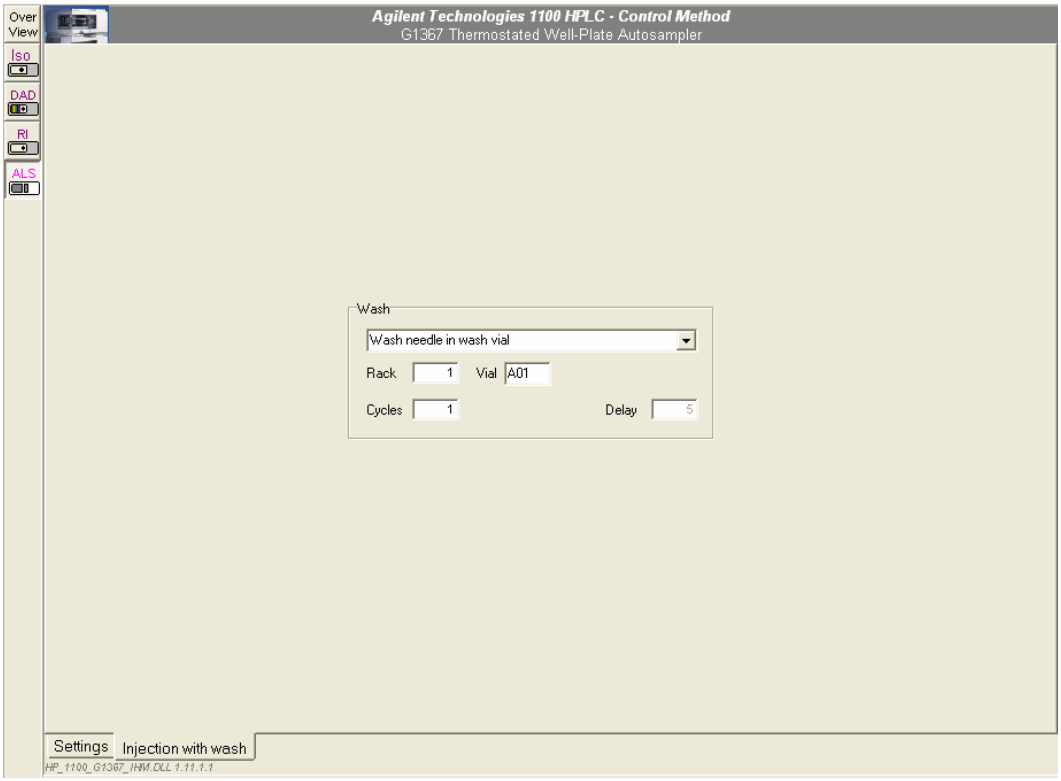
  Depending of the wash type, the following fields will be available.

  Rack: define in which rack the wash vial is located.

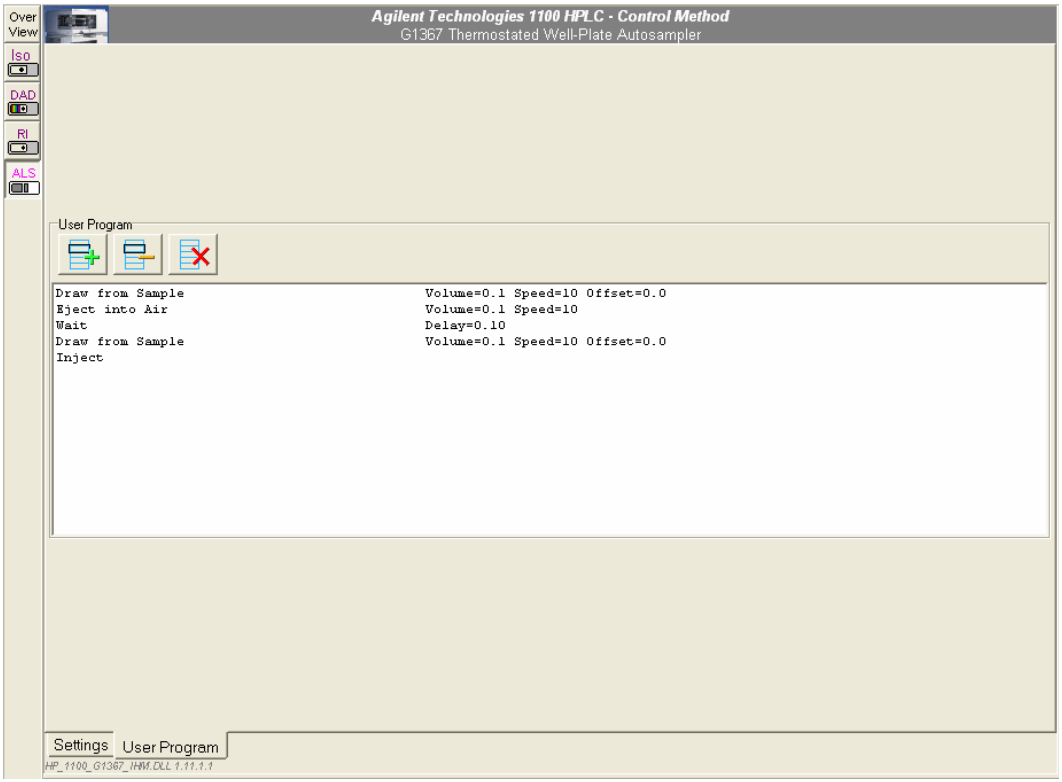
  Vial: define the location of the wash vial.

  Cycles: define the number of time the wash procedure will be done.

  Delay: define the time the needle will stay in the wash port or flush the seat.



- Injection user program: when selecting this injection mode, another tab is displayed allowing you to program different actions.



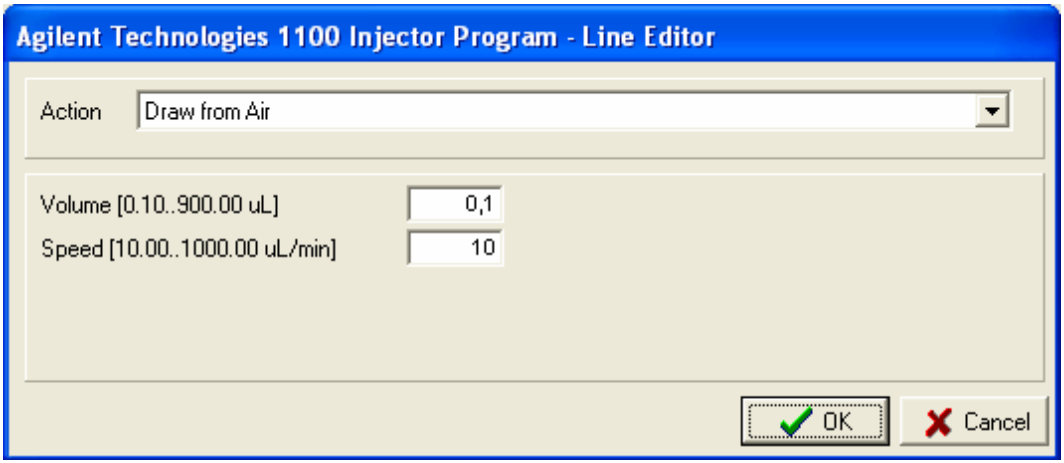
Use the following buttons to edit the table:

to add a line to the table.

to delete a line in the table.

to clear the entire table.

After a new line has been added, double-click on it to edit. A new window is displayed:



Use the scrolling list to choose the action to program. The available actions are:

Draw from Sample
Draw from Vial
Draw from Seat
Draw from Air
Eject into Sample
Eject into Vial
Eject into Seat
Eject into Air
Mix in capillary
Mix in air
Wait
Inject
Valve Mainpass
Valve Bypass
Valve Mainpass with start pulse
Valve Mainpass for a time, needle in sample vial
Valve Mainpass for a time, needle in vial
Valve Mainpass for a time, needle in seat
Move Needle to uppermost position
Move Needle to seat
Move Needle to sample vial
Move Needle to vial
Move Syringe back
Move Syringe forth

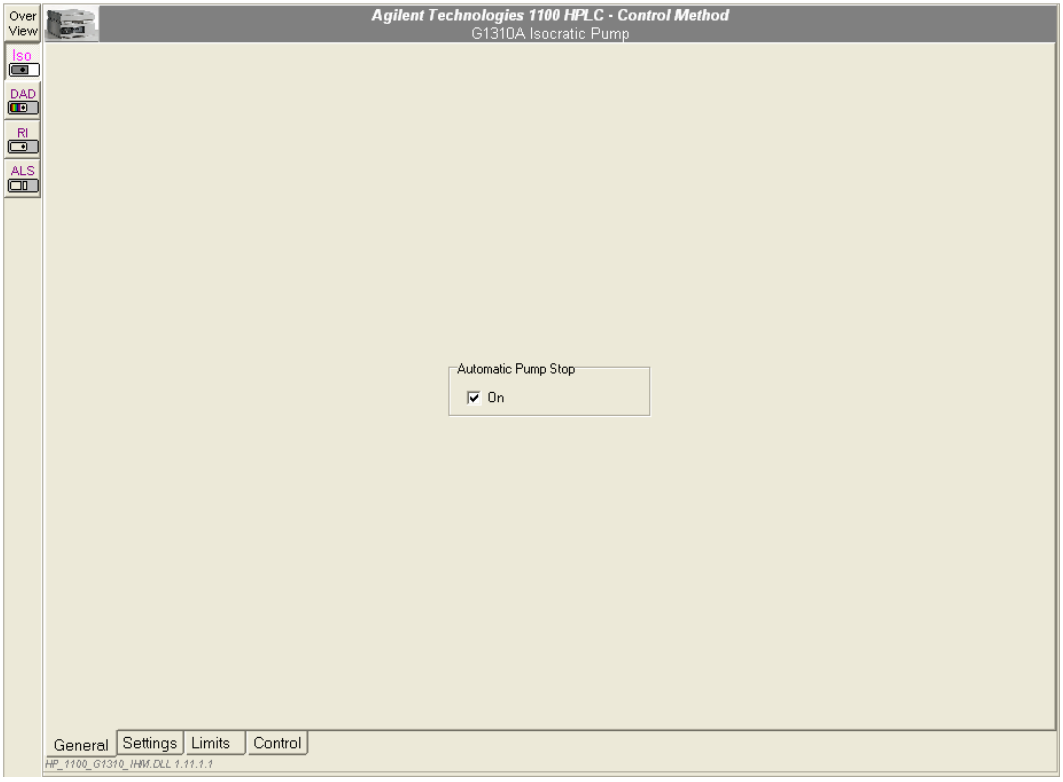
Depending on the selected action, the parameters to fill in will be different.

Control Section for the Agilent LC 1100 Isocratic Pump (G1310)

Click on the

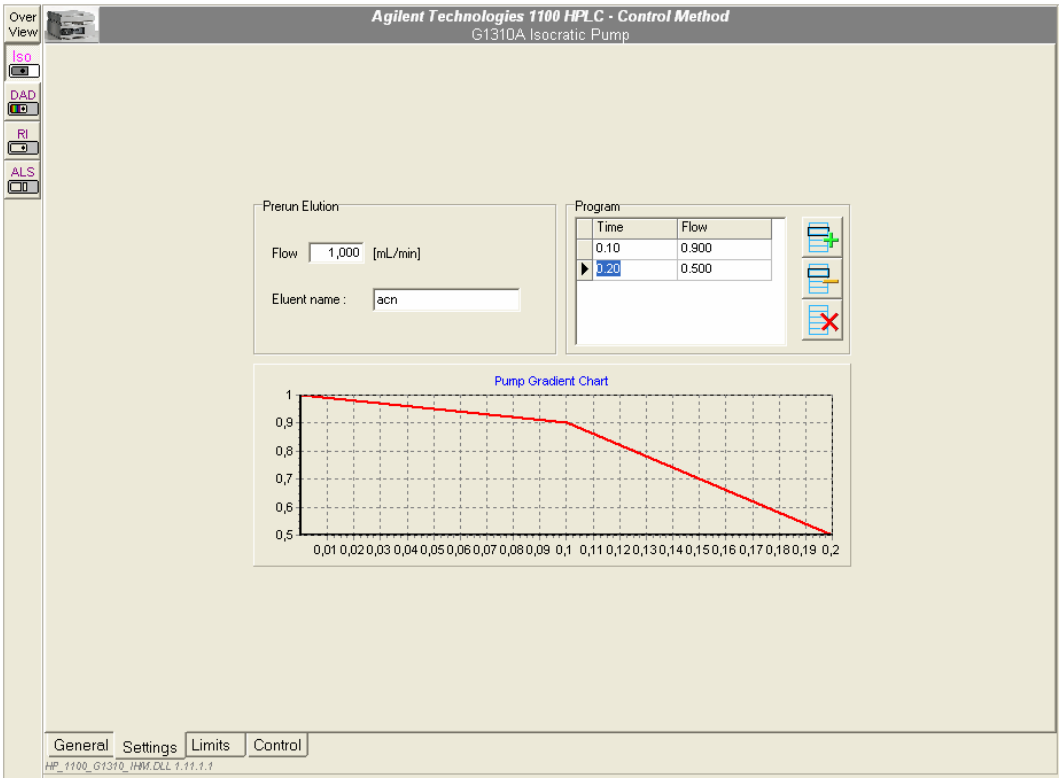
button to display the Agilent Technologies 1100 Isocratic pump (G1310) control method section. It contains four sub-sections: *General, Settings, Limits* and *Control*. Click on the required sub-section to define the corresponding parameters that will be used during the chromatographic run.

General Control



Check *Automatic Pump Stop* to turn off the pump at the end of a sequence.

Settings Control



Prerun Elution Parameter Group

In the *Flow* field, enter the total flow rate.

In the *Eluent name* field, enter the solvent name (optional).

Program Parameter Group

Program a flow. The time is the elapsed time since the beginning of the run. The chart represents the flow evolution.

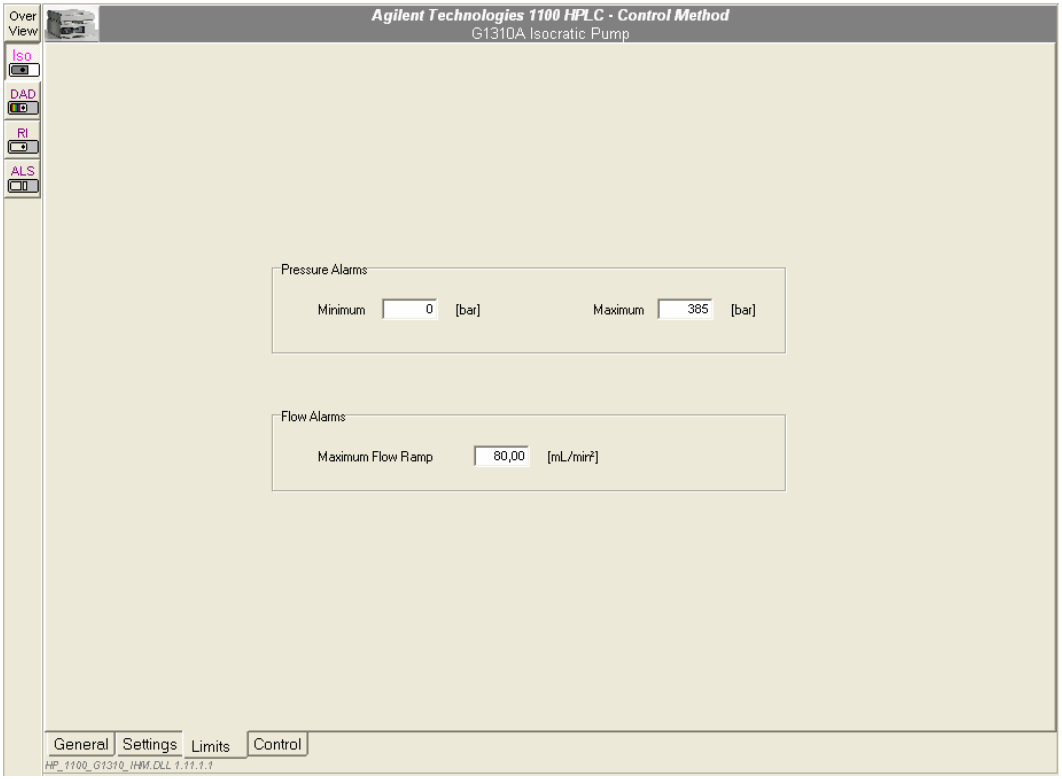
Use the following buttons to edit the table:

to add a line to the table.

to delete a line in the table.

to clear the entire table.

Limits Control



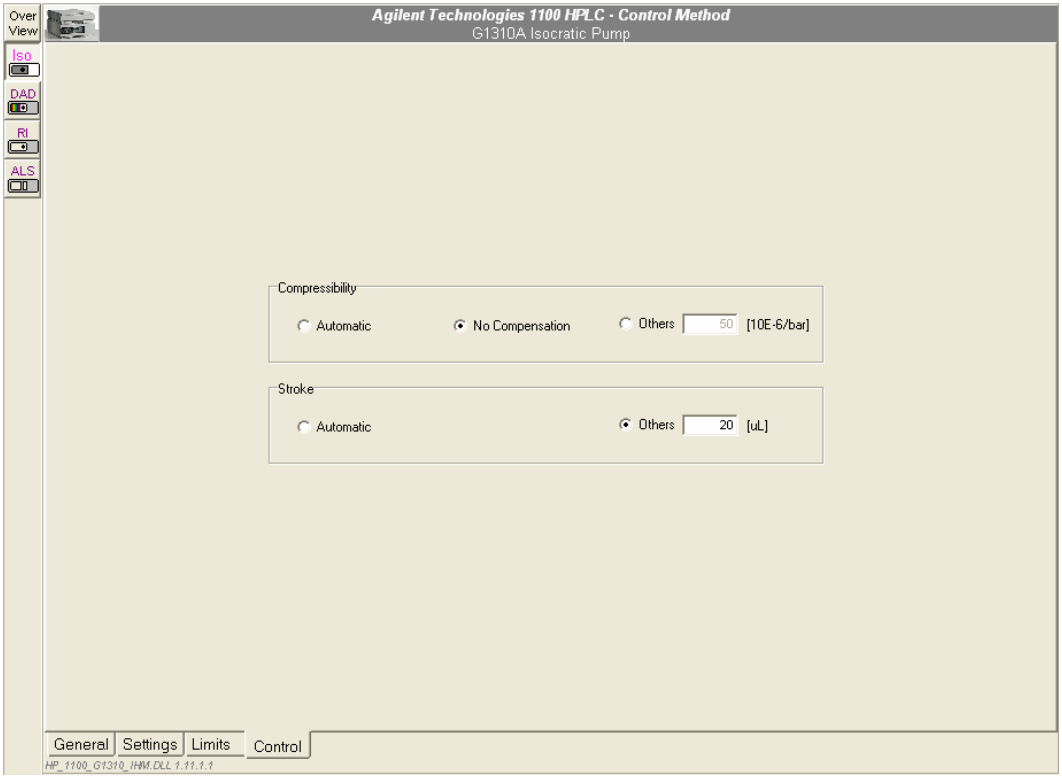
Pressure Alarms Parameter Group

Enter the *Minimum* and *Maximum* pressure limits of the pump. Outside these limits, the pump is stopped.

Flow Alarms Parameter Group

Enter the *Maximum Flow Ramp* of the pump. Outside this limit, the pump is stopped.

Control Control



Compressibility Parameter Group

To take into account the compressibility of the solvents, select one of the available three choices: *Automatic*, *No compensation*, or *Others* (in this case, enter the value of the compressibility).

Stroke Parameter Group

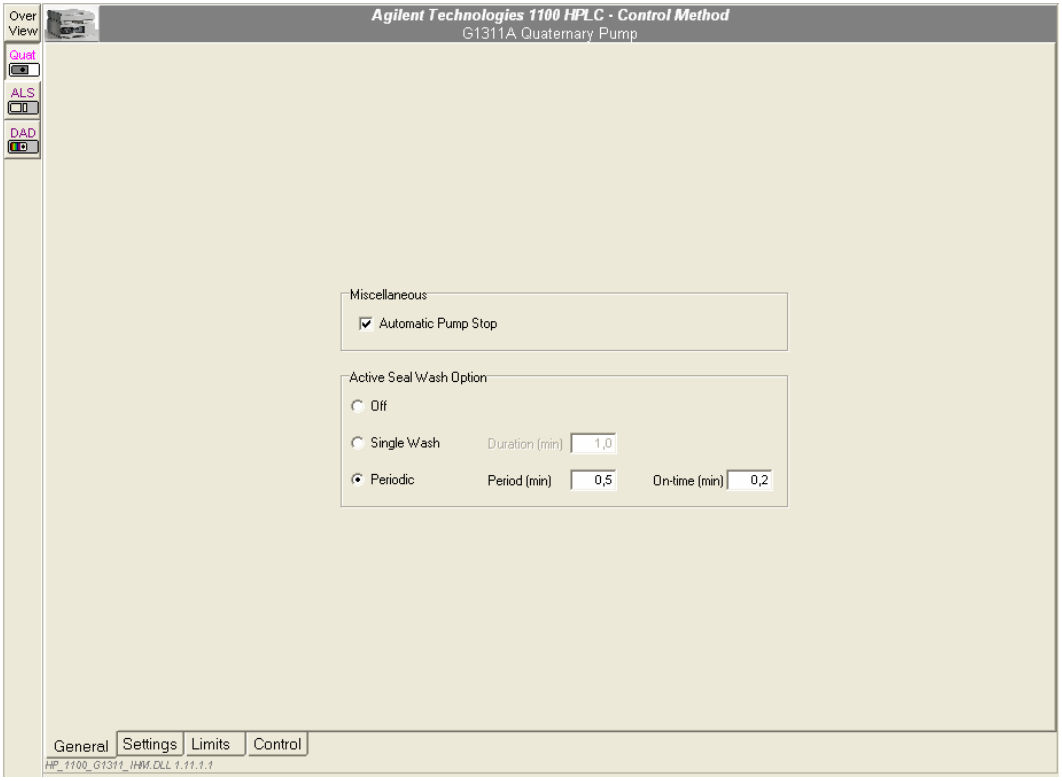
Select the volume of the mobile phase which is moved every plunger stroke. Two choices are available: *Automatic* or *Others* (in this case, enter the volume of the mobile phase which will be moved every plunger stroke).

Control Section for the Agilent LC 1100 Quaternary Pump (G1311)

Click on the

button to display the Agilent Technologies 1100 Quaternary pump (G1311) control method section. It contains four sub-sections: *General, Settings, Limits* and *Control*. Click on the required sub-section to define the corresponding parameters that will be used during the chromatographic run.

General Control



Miscellaneous Parameter Group

Check *Automatic Pump Stop* to turn off the pump at the end of a sequence.

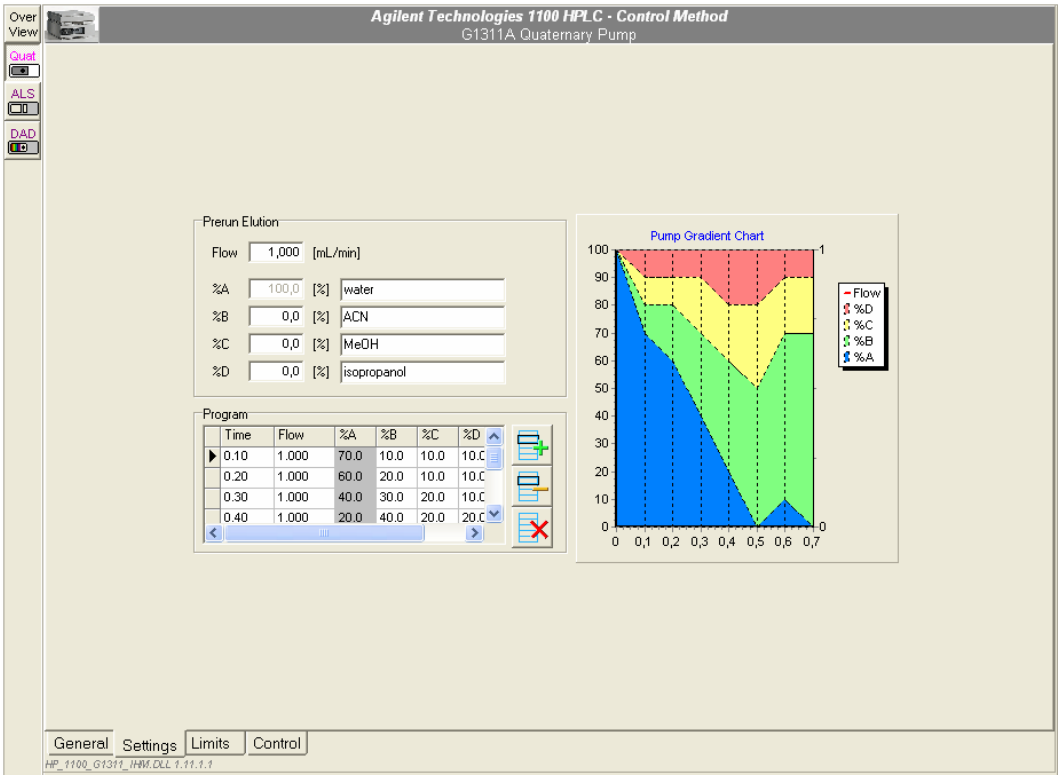
Active Seal Wash Option Parameter Group

Select Off to disable the Active Seal Wash Option.

Select *Single Wash* to perform a single wash. Enter the desired wash time in the *Duration* field.

Select Periodic to perform periodic washes. Enter the Period and On-time in the corresponding fields.

Settings Control



Prerun Elution Parameter Group

In the *Flow* field, enter the total flow rate.

Enter the mobile phase composition by entering the percentage of each solvent in the corresponding field.

The *%A* field is a read-only field. The %A value is automatically calculated according to the other solvent percentage values.

Enter the name of each solvent (optional).

Program Parameter Group

Program a flow and/or a composition gradient. Each step of the program includes time and new values for flow and/or

composition. The time is the elapsed time since the beginning of the run. The *Pump Gradient Chart* represents the pump program.

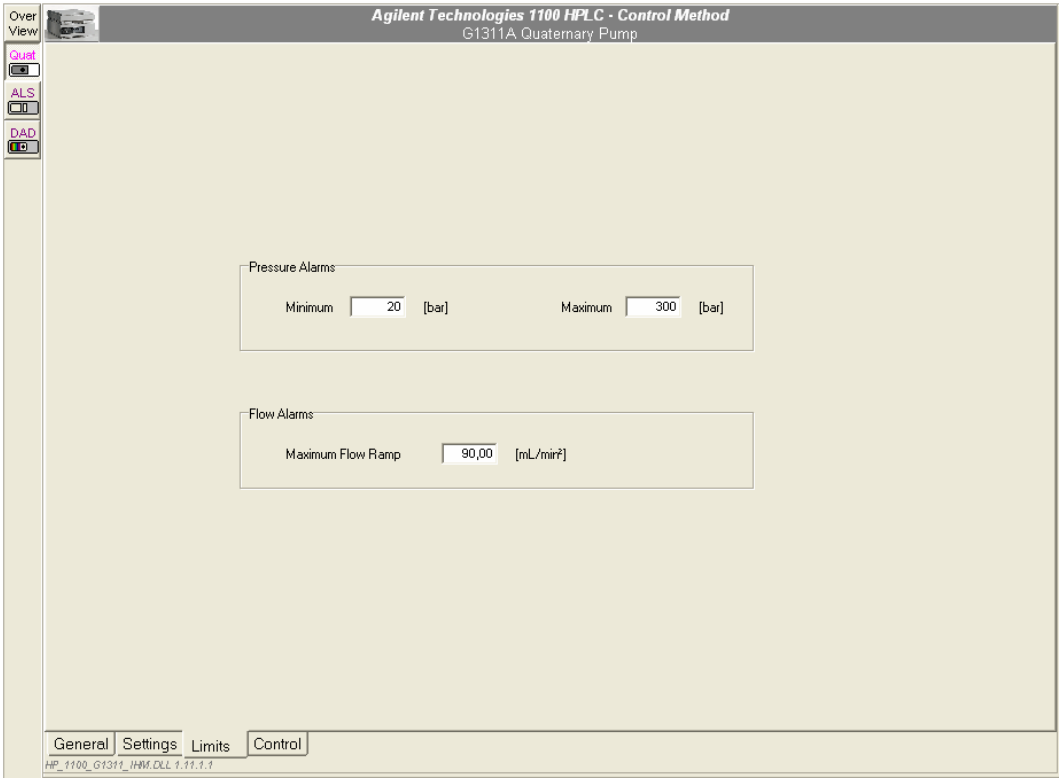
Use the following buttons to edit the table:

to add a line to the table.

to delete a line in the table.

to clear the entire table.

Limits Control



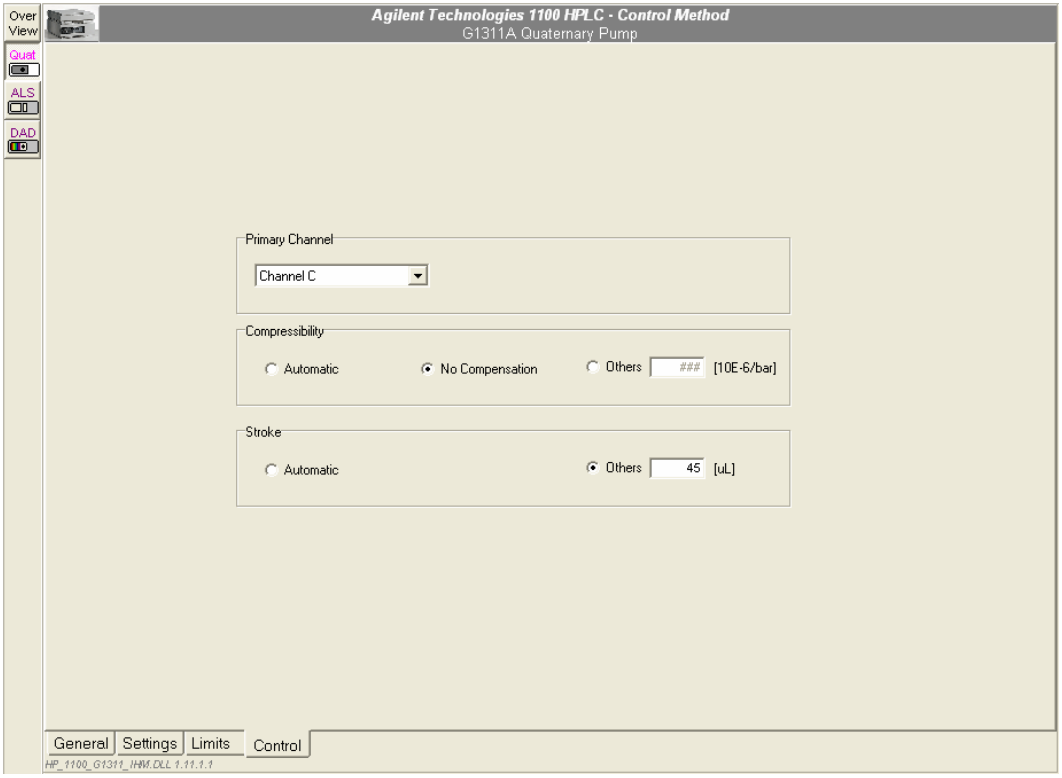
Pressure Alarms Parameter Group

Enter the *Minimum* and *Maximum* pressure limits of the pump. Outside these limits, the pump is stopped.

Flow Alarms Parameter Group

Enter the *Maximum Flow Ramp* of the pump. Outside this limit, the pump is stopped.

Control Control



Primary Channel Parameter Group

Select in the scrolling list the channel where the following actions will be done. The available choices are: Automatic, Channel A, Channel B, Channel C, Channel D.

Compressibility Parameter Group

To take into account the compressibility of the solvents, select one of the three available choices: *Automatic, No compensation,* or *Others* (in this case, enter the value of the compressibility).

Stroke Parameter Group

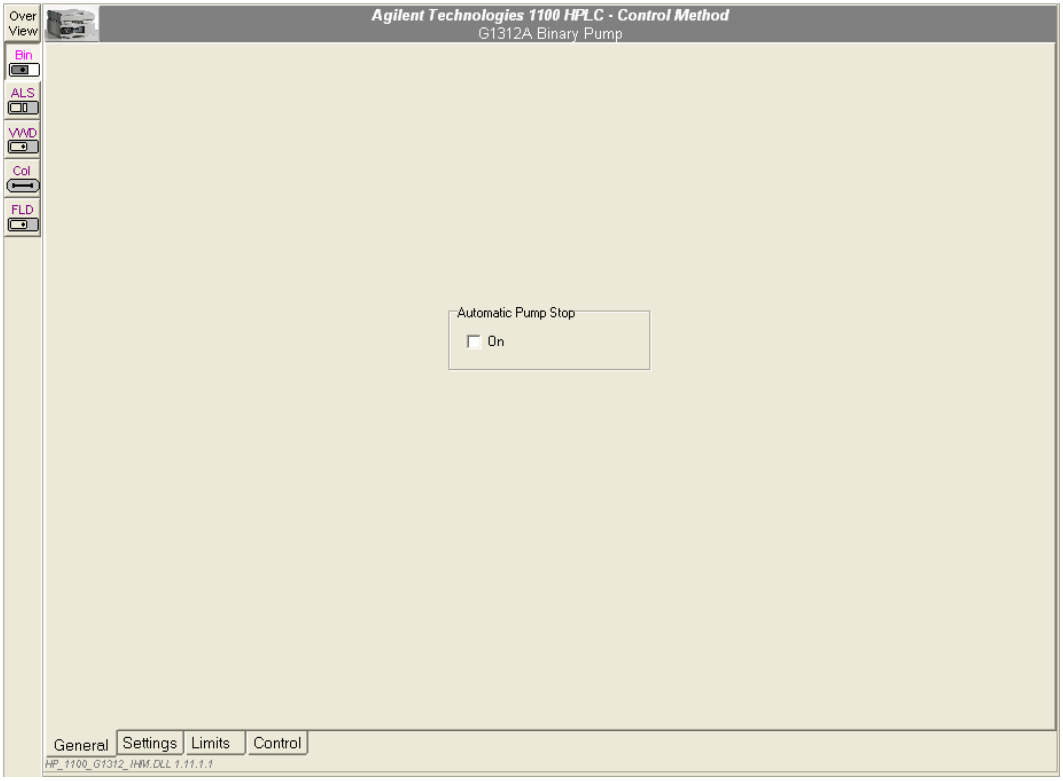
Select the volume of the mobile phase which is moved every plunger stroke. Two choices are available: *Automatic* or *Others* (in this case, enter the volume of the mobile phase which will be moved every plunger stroke).

Control Section for the Agilent LC 1100 Binary Pump (G1312)

Click on the

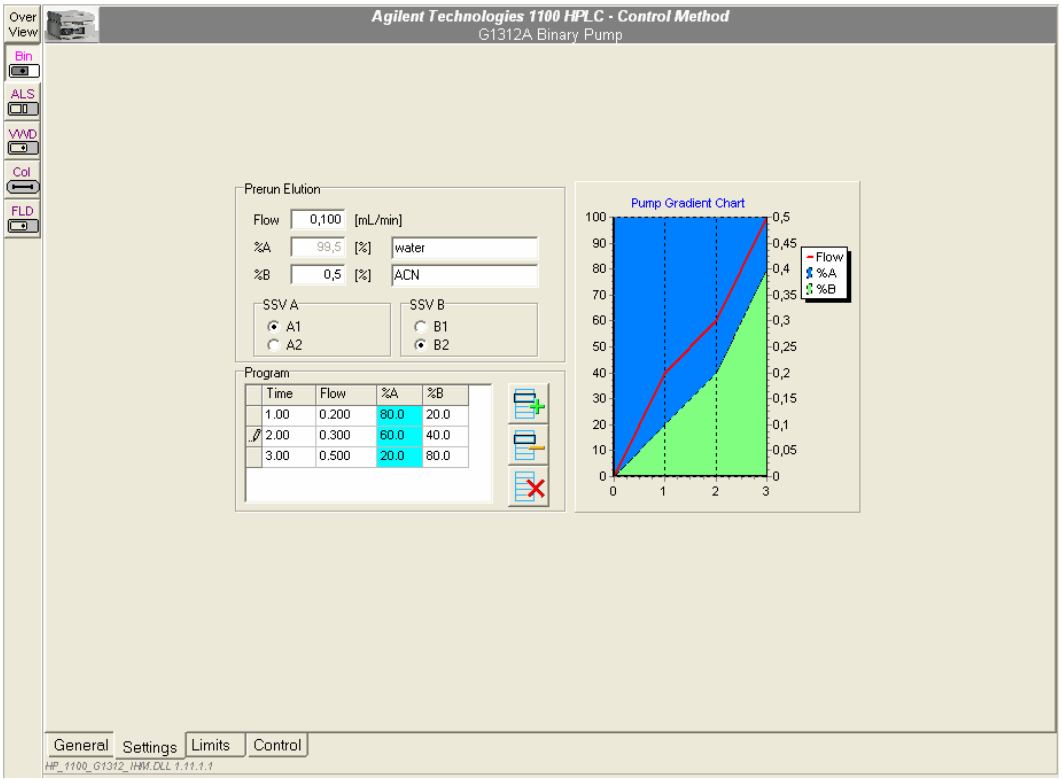
button to display the Agilent Technologies 1100 Binary pump (G1312) control method section. It contains four sub-sections: *General, Settings, Limits* and *Control*. Click on the required sub-section to define the corresponding parameters that will be used during the chromatographic run.

General Control



Check *Automatic Pump Stop* to turn off the pump at the end of a sequence.

Settings Control



Prerun Elution Parameter Group

In the *Flow* field, enter the total flow rate.

Enter the mobile phase composition by entering the percentage of the solvent B in the *%B* field.

The *%A* field is a read-only field. The %A value is automatically calculated according to the %B value.

Enter the name of each solvent (optional).

For Solvent Selection Valves A and B, choose the solvent selection channel.

Program Parameter Group

Program an elution flow and/or a composition gradient. Each step of the program includes time, flow and/or composition new values. The time is the elapsed time since the beginning of the run. The *Pump Gradient Chart* represents pump program.

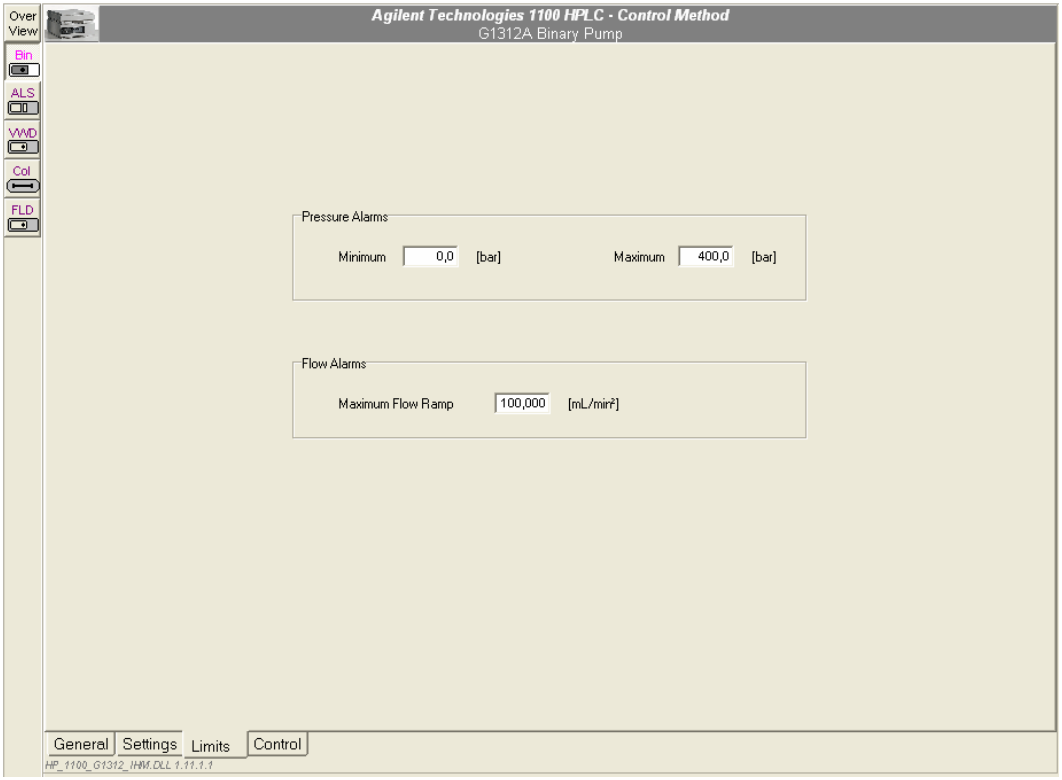
Use the following buttons to edit the table:

to add a line to the table.

to delete a line in the table.

to clear the entire table.

Limits Control



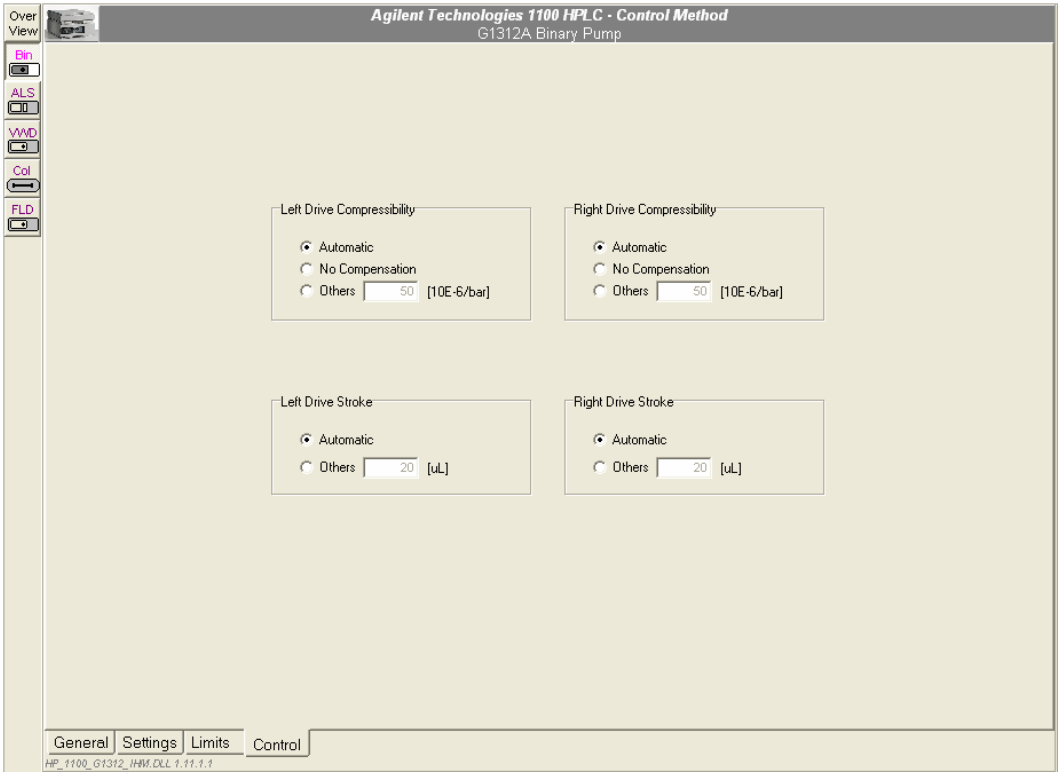
Pressure Alarms Parameter Group

Enter the *Minimum* and *Maximum* pressure limits of the pump. Outside these limits, the pump is stopped.

Flow Alarms Parameter Group

Enter the *Maximum Flow Ramp* of the pump. Outside this limit, the pump is stopped.

Control Control



Left and Right Drive Compressibility Parameter Group

For each drive, to take into account the compressibility of the solvents, select one of the available three choices: *Automatic*, *No compensation*, or *Others* (in this case, enter the value of the compressibility).

Left and Right Drive Stroke Parameter Group

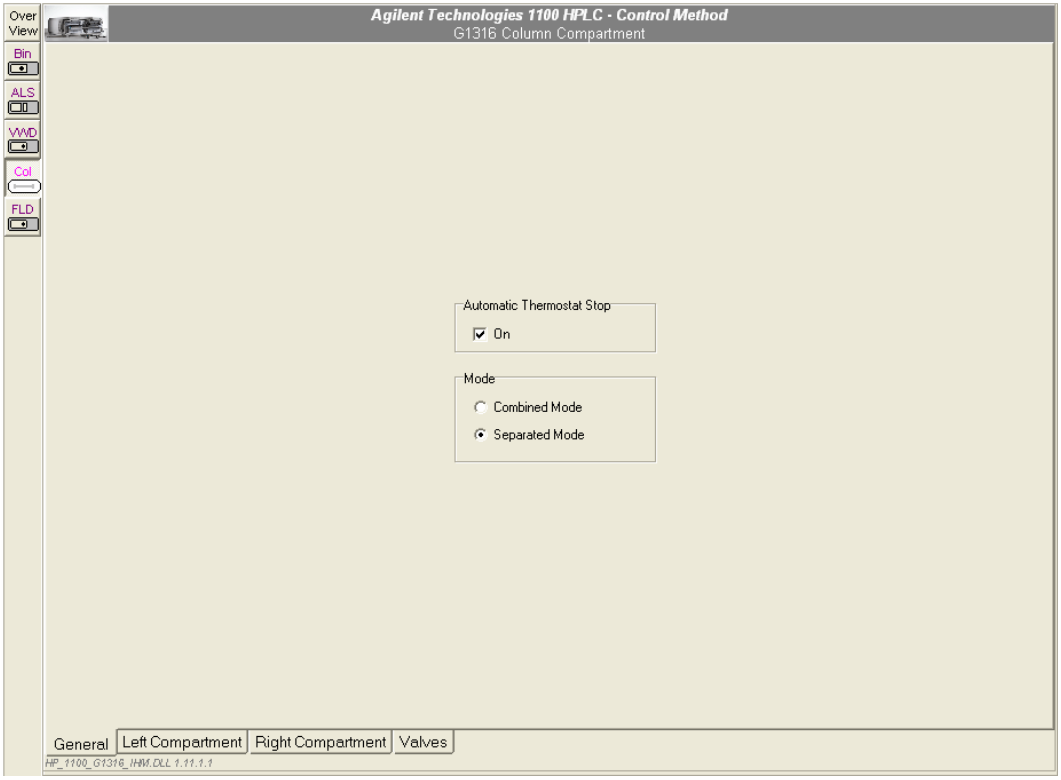
For each drive, select the volume of the mobile phase which is moved every plunger stroke. Two choices are available: *Automatic* or *Others* (in this case, enter the volume of the mobile phase which will be moved every plunger stroke).

Control Section for the Agilent LC 1100 Column Compartment (G1316)

Click on the

button to display the Agilent Technologies 1100 Column Compartment (G1316) control method section. It contains four sub-sections: *General, Left Compartment, Right Compartment* and *Valves*. Click on the required sub-section to define the corresponding parameters that will be used during the chromatographic run.

General Control



Check *Automatic Thermostat Stop* to turn off the thermostat at the end of the run.

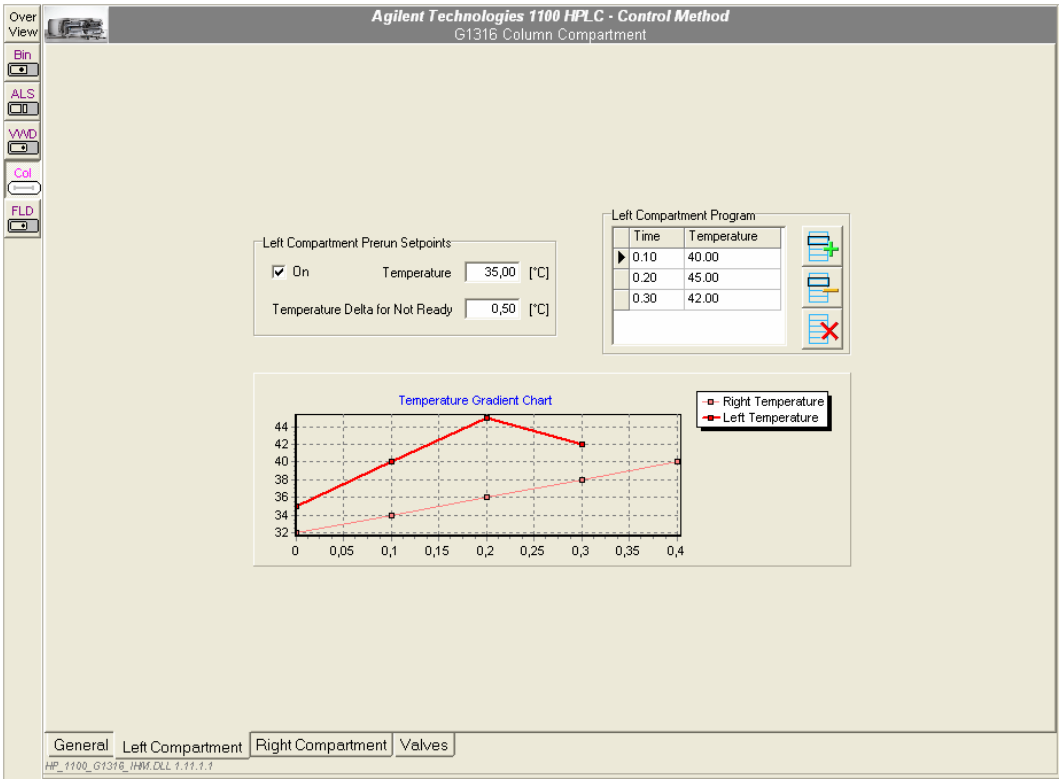
Check *Combined Mode* to control the two column compartments in the same way. The control parameters will be entered in the

Left Compartment sub-section (the *Right Compartment* sub-section will not be active).

Check *Separated Mode* to control each compartment separately. The control parameters will be entered in both *Left* and *Right Compartment sub-sections.*

Left Compartment Control

NOTE: The *Left Compartment* and the *Right Compartment* sub-sections have the same parameters. Only the *Left Compartment* sub-section parameters will be explained.



Left Compartment Prerun Setpoints Parameter Group

Check the *On* box to activate the column compartment temperature regulation.

Enter the setpoint temperature in the *Temperature* field.

Enter the *Temperature Delta for Not Ready* in the corresponding field.

Left Compartment Program Parameter Group

Program a temperature. The time is the elapsed time since the beginning of the run. The chart represents the temperature evolution.

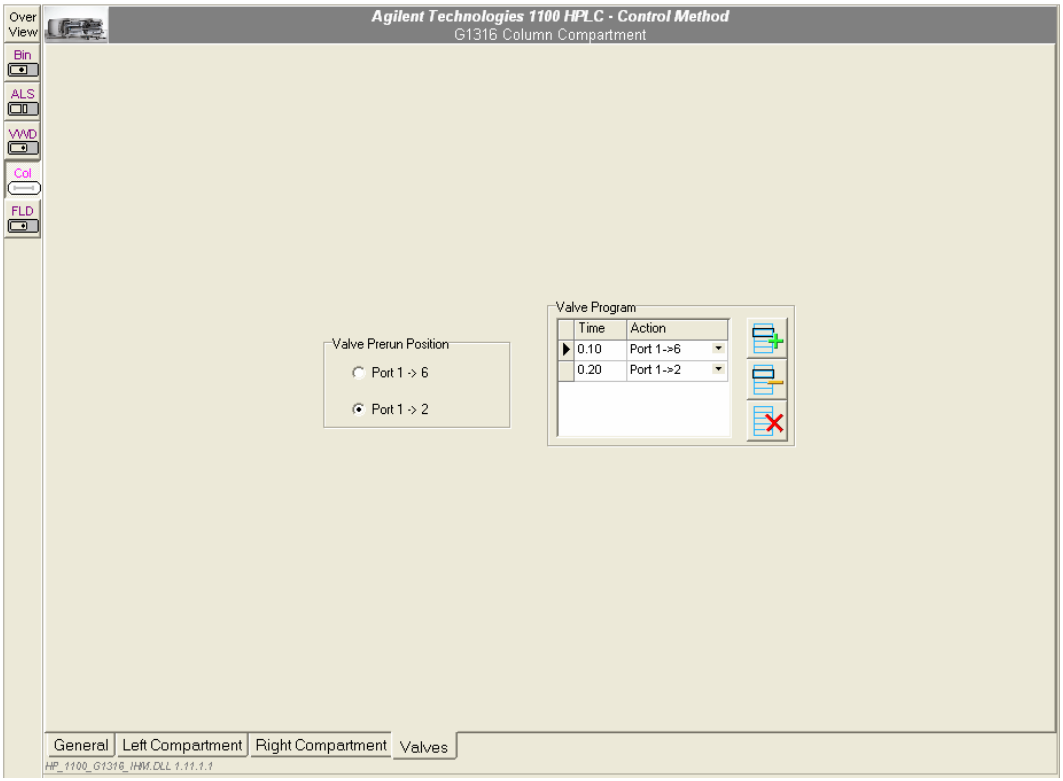
Use the following buttons to edit the table:

to add a line to the table.

to delete a line in the table.

to clear the entire table.

Valves Control



Valve Prerun Position Parameter Group

Select the position of the valve before the run begins. The available choices are: *Port 1>6* and *Port 1>2*

Valve Program Parameter Group

Program valve position changes during the run. The time is the elapsed time since the beginning of the run.

Use the following buttons to edit the table:

to add a line to the table.

to delete a line in the table.

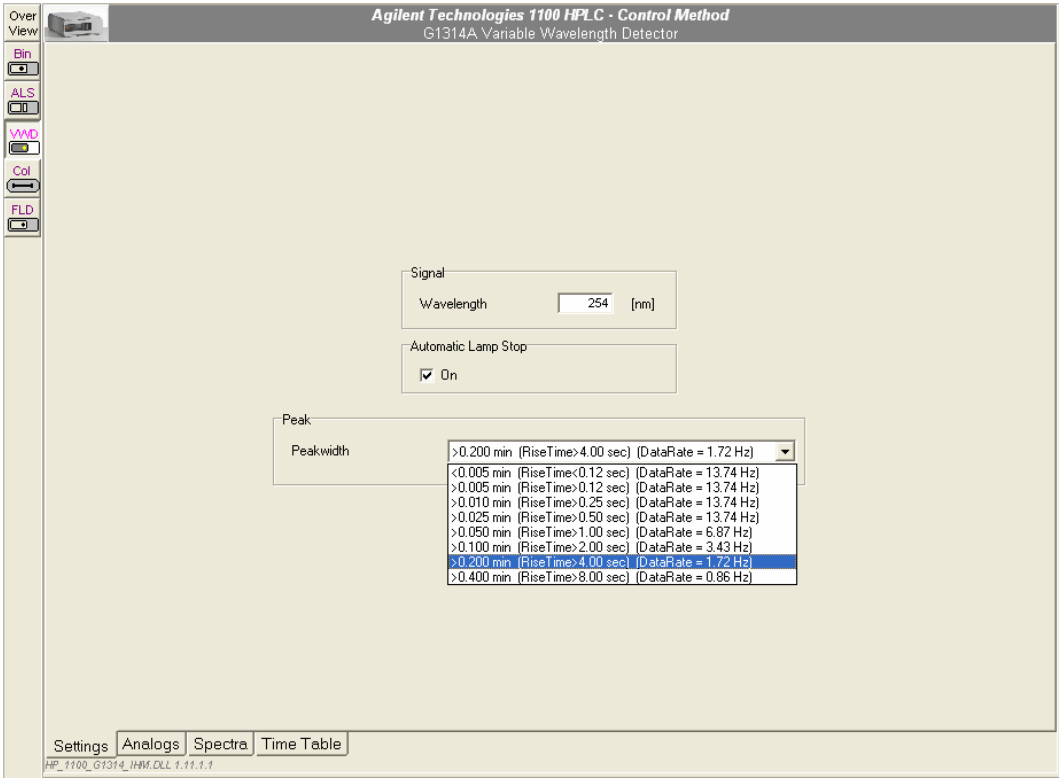
to clear the entire table.

Control Section for the Agilent LC 1100 Variable Wavelength Detector (G1314)

Click on the

button to display the Agilent Technologies 1100 Variable Wavelength Detector (G1314) control method section. It contains four sub-sections: *Settings, Analogs, Spectra* and *Time table*. Click on the required sub-section to define the corresponding parameters that will be used during the chromatographic run.

Settings Control



Signal Parameter Group

In the *Wavelength* field, enter the value of the initial Wavelength.

Automatic Lamp Stop Parameter Group

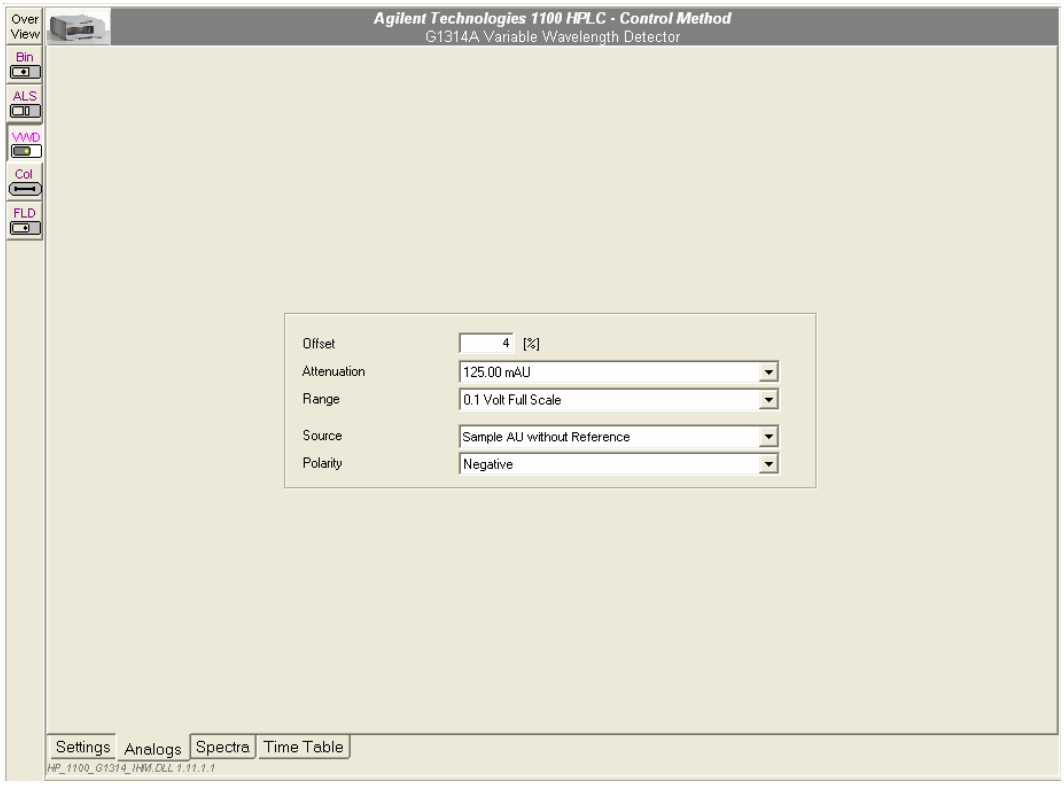
Check *Automatic Lamp Stop* to stop automatically the detector lamp at the end of the run.

Peak Parameter Group

Select the *Peakwidth* value in the scrolling list. This parameter influences the peak detection. A response time and a data rate are associated with each peakwidth value. The available values are:

<0.005 min (RiseTime<0.12 sec) (DataRate=13.74 Hz)
>0.005 min (RiseTime>0.12 sec) (DataRate=13.74 Hz)
>0.010 min (RiseTime>0.25 sec) (DataRate=13.74 Hz)
>0.025 min (RiseTime>0.5 sec) (DataRate=13.74 Hz)
>0.05 min (RiseTime>1 sec) (DataRate=6.87 Hz)
>0.1 min (RiseTime>2 sec) (DataRate=3.43 Hz)
>0.2 min (RiseTime>4 sec) (DataRate=1.72 Hz)
>0.4 min (RiseTime>8 sec) (DataRate=0.86 Hz)

Analogs Control



In the *Offset* field, enter the offset value to adjust the baseline.

In the *Attenuation* scrolling list, enter the attenuation value. The available values are:

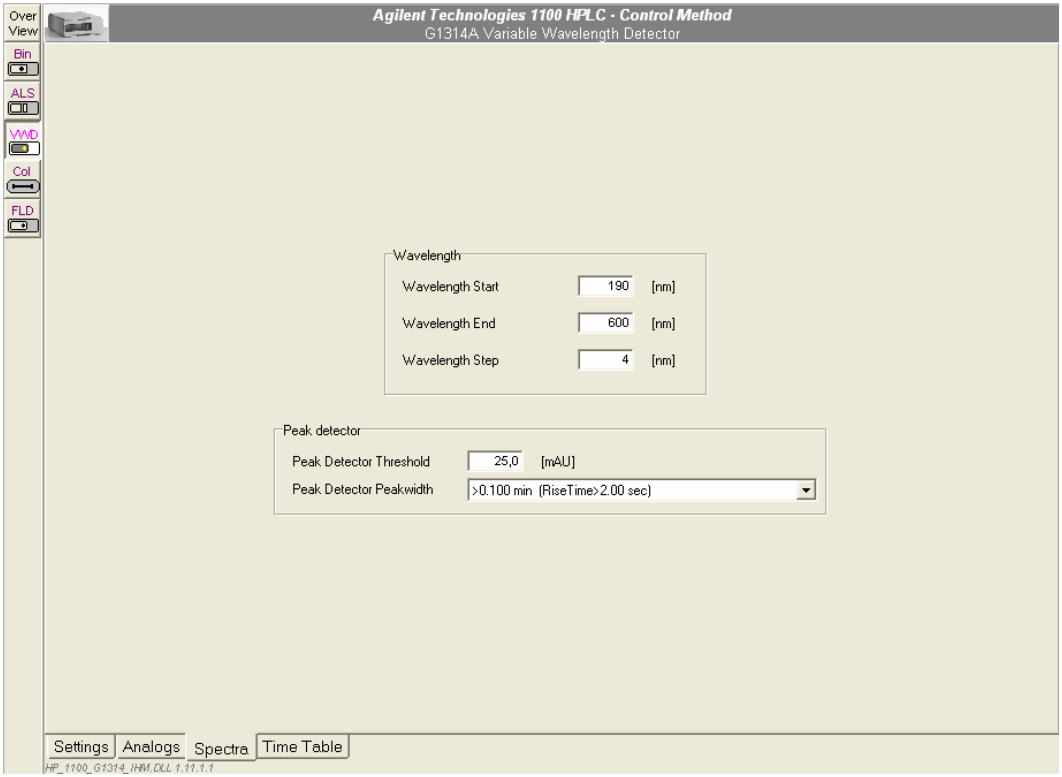
0.97 mAU full range, 1.95 mAU, 3.90 mAU, 7.81 mAU, 15.62 mAU, 31.25 mAU, 62.50 mAU, 125 mAU, 250 mAU, 500 mAU, 1000 mAU, 2000 mAU and 4000 mAU.

In the *Range* scrolling list, enter the output voltage range value. The available values are: 0.1 Volt Full Scale and 1Volt Full Scale.

In the *Source* scrolling list, enter the collected signal type. The available values are: Absorbance Units AU, Sample AU without Reference, Reference AU without Sample, Test Chromatogram, Unfiltered and not logarithm Sample, Unfiltered and not logarithm Reference, Analog Output Test Function, Sample Diode Current, Reference Diode Current, Lamp Anode Voltage, Lamp Anode Current, Lamp Heater Voltage, Lamp Heater Current, Grating Motor Step, Filter Motor Step, Board Temperature and PTC current.

In the *Polarity* scrolling list, enter the detector polarity. The available values are: Positive and Negative.

Spectra Control



Wavelength Parameter Group

In the *Wavelength Start* field, enter the minimum spectra wavelength.

In the *Wavelength End* field, enter the maximum spectra wavelength.

In the *Wavelength Step* field, enter the wavelength step.

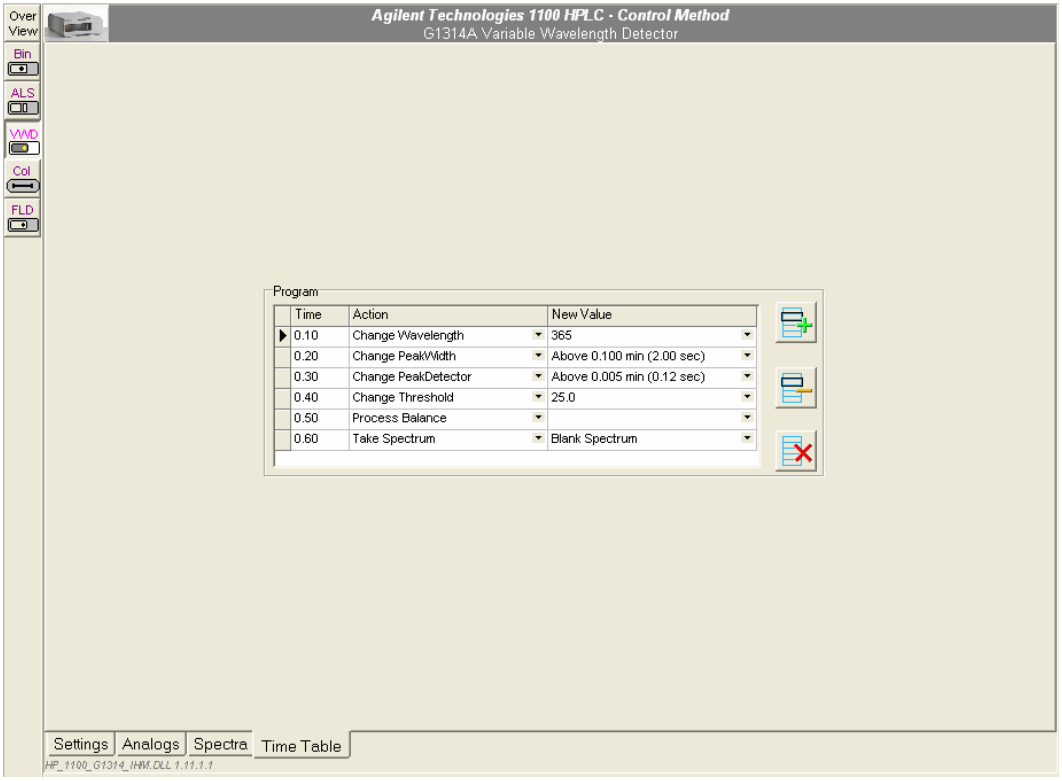
Peak Detector Parameter Group

In the *Peak Detector Threshold* field, enter the peak detector threshold value.

In the *Peak Detector Peakwidth* scrolling list, select the peak detector peakwidth value. A response time is associated with each peakwidth values. The available values are:

<0.005 min (RiseTime<0.12 sec)
>0.005 min (RiseTime>0.12 sec)
>0.010 min (RiseTime>0.25 sec)
>0.025 min (RiseTime>0.5 sec)
>0.05 min (RiseTime>1 sec)
>0.1 min (RiseTime>2 sec)
>0.2 min (RiseTime>4 sec)
>0.4 min (RiseTime>8 sec)

Time Table Control



Program Parameter Group

Program detector changes during the run. In the action scrolling list, select *Change Wavelength*, *Change PeakWidth*, *Change PeakDetector* and/or *Change Threshold* and enter the corresponding time and new value. It is also possible to launch an autozero, (*Process Balance* function) or collect spectra (*Normal spectrum, Blank, Unknown* and *Holmium* of the *Take Spectrum* function*)*.

Use the following buttons to edit the table:

to add a line to the table.

to delete a line in the table.

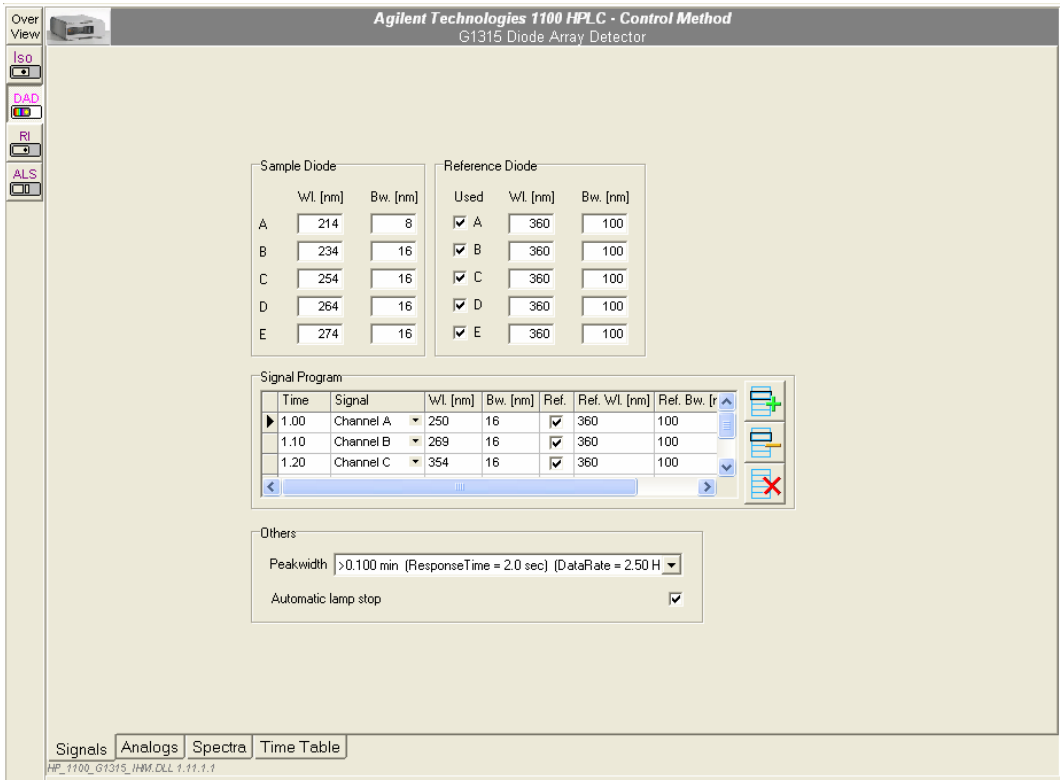
to clear the entire table.

Control Section for the Agilent LC 1100 Diode Array Detector (G1315)

Click on the

button to display the Agilent Technologies 1100 Diode Array Detector (G1315) control method section. It contains four sub-sections: *Signals, Analogs, Spectra* and *Time table*. Click on the required sub-section to define the corresponding parameters that will be used during the chromatographic run.

Signals Control



Sample Diode Parameter Group

Define the center wavelength in the *Wl* field and the bandwidth in the *Bw* field. The signal values contained within the bandwidth are bunched and give one value for the center wavelength.

Reference Diode Parameter Group

The use of a reference wavelength avoids baseline drift due to refractive index changes.

If a reference wavelength is defined, the measured signal value is the difference between absorbance at the sample wavelength and absorbance at the reference wavelength.

Define the center wavelength in the *Wl* field and the bandwidth in the *Bw* field. The signal values contained within the bandwidth are bunched and give one value for the center wavelength.

NOTE: For more details about the *reference wavelength* settings, refer to your *Agilent Technologies 1100 Diode Array Detector* technical documentation.

Signal Program Parameter Group

Program changes the wavelength and/or the bandwidth for each signal and/or its reference during runs.

Use the following buttons to edit the table:

to add a line to the table.

to delete a line in the table.

to clear the entire table.

Others Parameter Group

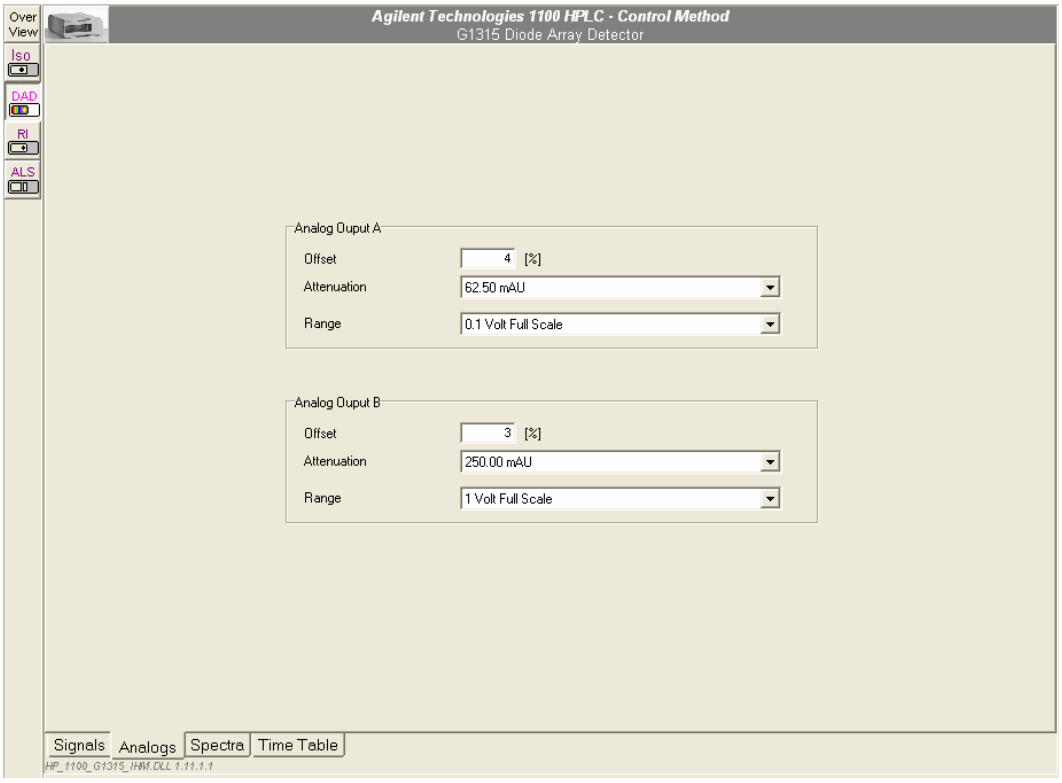
Check *Automatic Lamp Stop* to stop automatically the detector lamp at the end of the run.

Select the *Peakwidth* value in the scrolling list. This parameter influences the peak detection. A response time and a data rate are associated with each peakwidth value. The available values are:

<0.01 min (Response Time <0.1 sec) (DataRate=20 Hz)
>0.01 min (Response Time =0.2 sec) (DataRate=20 Hz)
>0.02 min (Response Time =0.5 sec) (DataRate=10 Hz)
>0.05 min (Response Time =1 sec) (DataRate=5 Hz)
>0.1 min (Response Time =2 sec) (DataRate=2.5 Hz)
>0.2 min (Response Time =4 sec) (DataRate=1.25 Hz)
>0.4 min (Response Time =8 sec) (DataRate=0.62 Hz)

>0.85 min (Response Time =16 sec) (DataRate=0.31 Hz)

Analogs Control



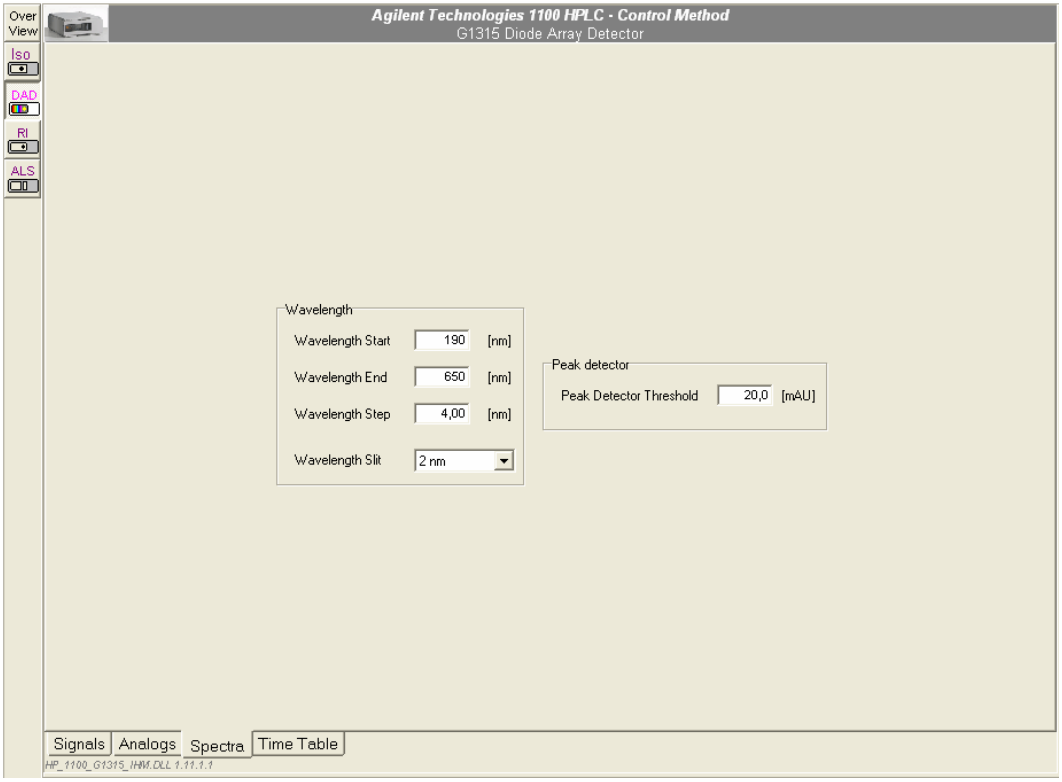
This detector has two analog outputs. For each one:

In the *Offset* field, enter the offset value to adjust the baseline.

In the *Attenuation* scrolling list, enter the attenuation value. The available values are: 0.97 mAU full range, 1.95 mAU, 3.90 mAU, 7.81 mAU, 15.62 mAU, 31.25 mAU, 62.50 mAU, 125 mAU, 250 mAU, 500 mAU, 1000 mAU and 2000 mAU.

In the *Range* scrolling list, enter the output voltage range value. The available values are: 0.1 Volt Full Scale and 1 Volt Full scale.

Spectra Control



Wavelength Parameter Group

In the *Wavelength Start* field, enter the minimum spectra wavelength.

In the *Wavelength End* field, enter the maximum spectra wavelength.

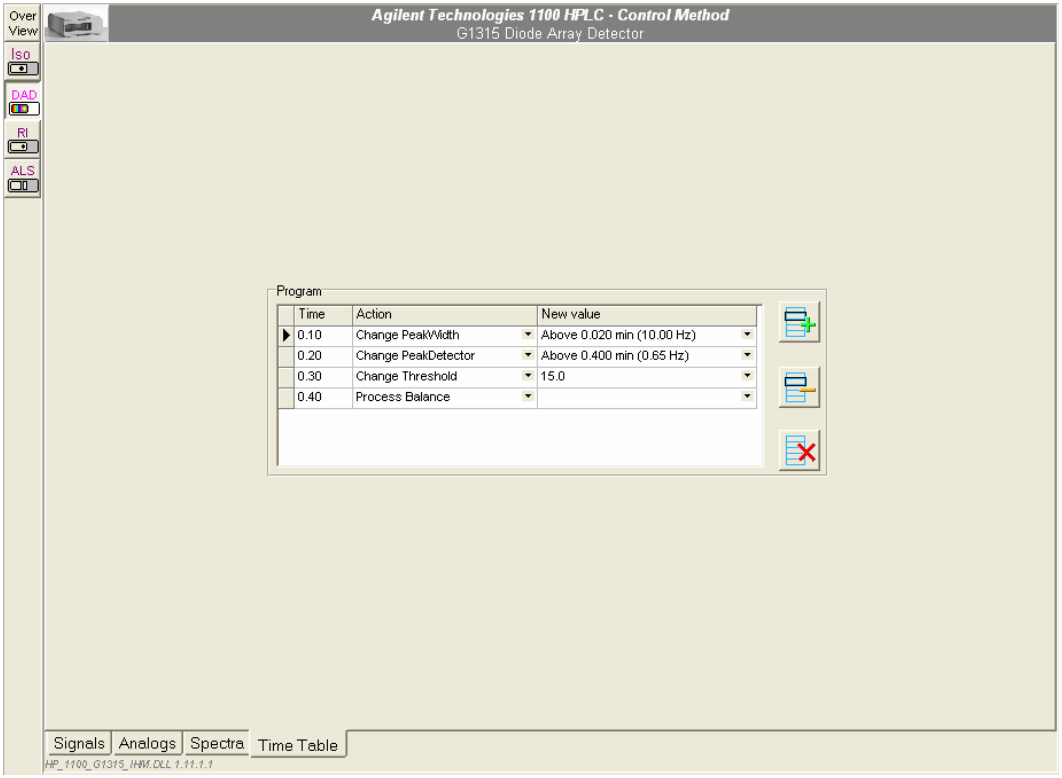
In the *Wavelength Step* field, enter the wavelength step.

In the *Wavelength Slit* scrolling list, select the wavelength slit. The available choices are: 1, 2, 4, 8 and 16 nm.

Peak Detector Parameter Group

In the *Peak Detector Threshold* field, enter the peak detector threshold value.

Time Table Control



Program Parameter Group

Program detector changes during the run. In the action scrolling list, select *Change Wavelength*, *Change PeakDetector* and/or *Change Threshold* and enter the corresponding time and new value. It is also possible to launch an autozero (*Process Balance* function)

Use the following buttons to edit the table:

to add a line to the table.

to delete a line in the table.

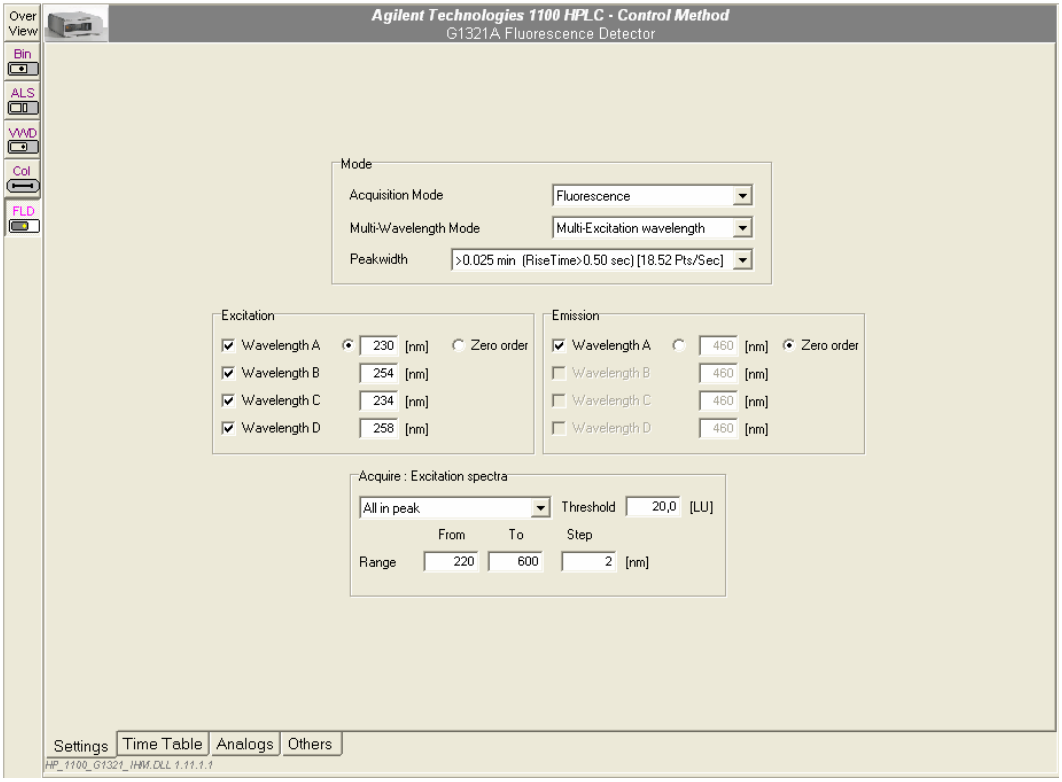
to clear the entire table.

Control Section for the Agilent LC 1100 Fluorescence Detector (G1321)

Click on the

button to display the Agilent Technologies 1100 Fluorescence Detector (G1321) control method section. It contains five sub-sections: *Settings, Analogs, Time table, Phosphorescence* and *Others*. Click on the required sub-section to define the corresponding parameters that will be used during the chromatographic run.

Settings Control



Mode Parameter Group

Choose the *Acquisition Mode* between Fluorescence, Phosphorescence, or Chemo-luminescence.

To work in emission or excitation *Multi-wavelength mode*, select the corresponding mode in the scrolling list. When selecting the excitation multi-wavelength mode, the wavelengths from B to D in the emission part are not accessible and vice versa.

Select in the *Peakdwidth* scrolling list, the peakdwidth of the detector influencing the peak detection. A response time and a data rate are associated to each peakwidth values.

Excitation Parameter Group

Check *Wavelength A* to *Wavelength D* to activate the corresponding wavelengths in multi--wavelength mode. Enter their values in the corresponding fields.

Check *Zero Order* to work at zero order.

Emission Parameter Group

Check *Wavelength A* to *Wavelength D* to activate the corresponding wavelengths in multi--wavelength mode. Enter their values in the corresponding fields.

Check *Zero Order* to work at zero order.

Acquire Spectra Parameter Group

Using the scrolling list, select the spectral Acquisition Mode.

None: no spectra are stored.

Apex: only the top of peak spectrum is stored.

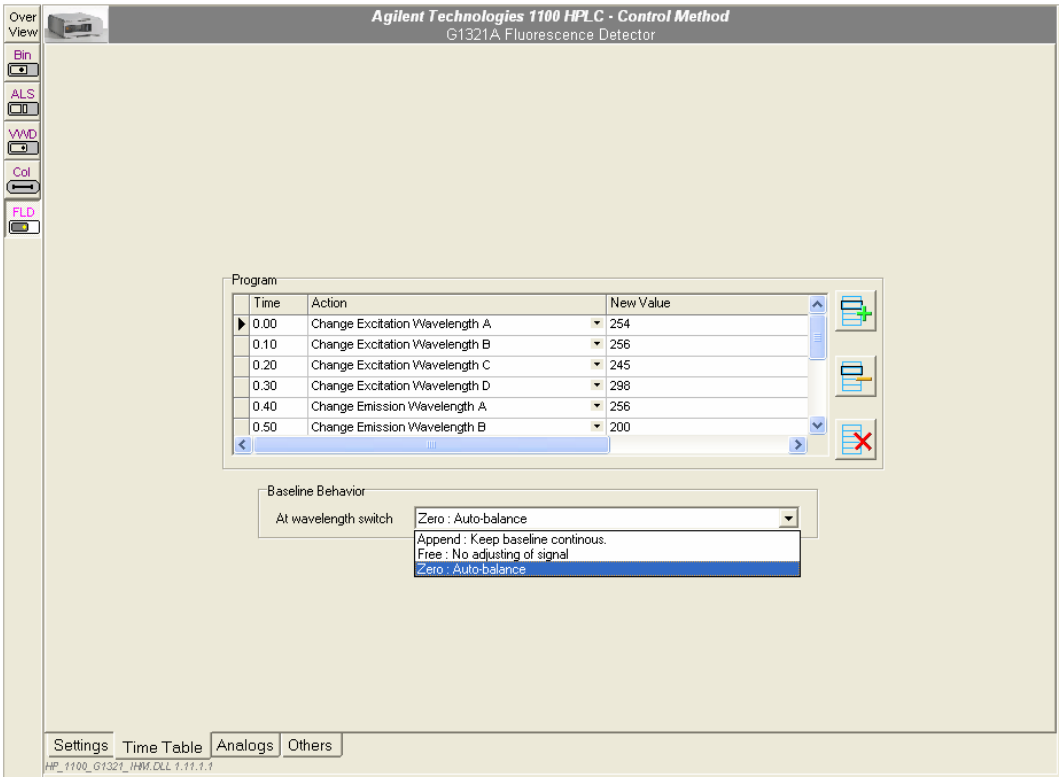
All in peak: all spectra between the beginning and the end of a peak are stored.

All: all spectra are stored during the run.

In the fields defining the *Range,* enter the minimum and maximum wavelength of the spectrum. Enter then the wavelength Step in the corresponding field. A small wavelength step will enhance the spectrum resolution.

Enter the value of the *Threshold* in the corresponding field.

Time Table Control



Program Parameter Group

Program detector changes during the run. Change the excitation or emission wavelength, the peakdetector and/or the threshold values.

Use the following buttons to edit the table:

to add a line to the table.

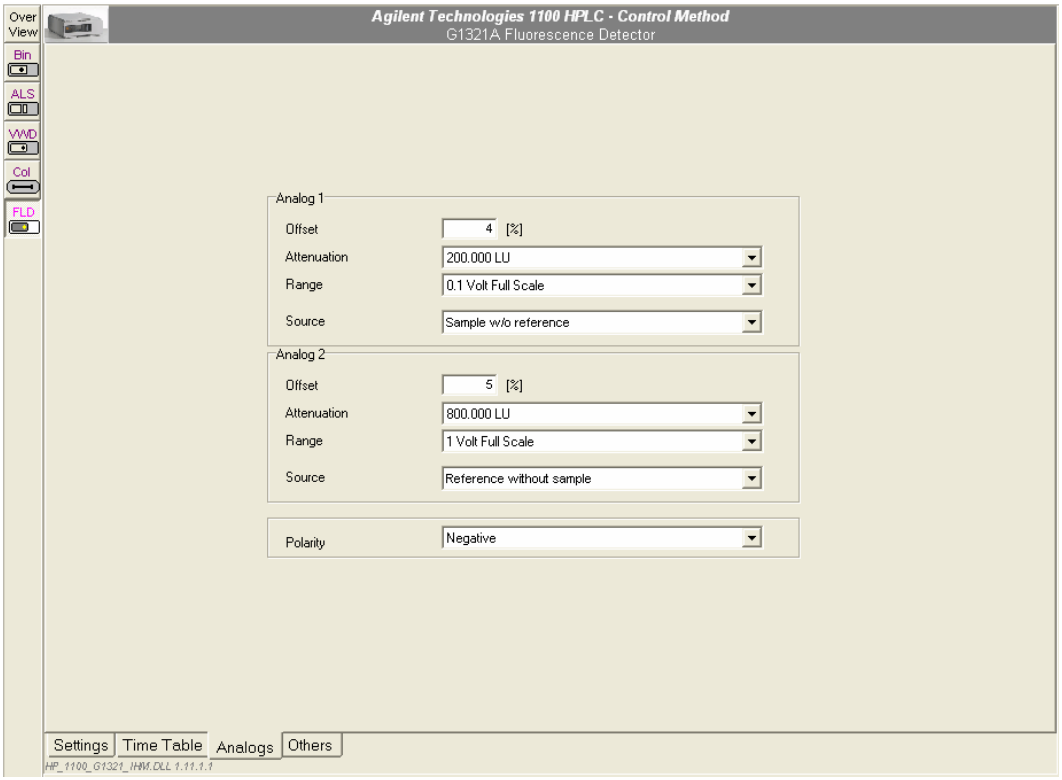
to delete a line in the table.

to clear the entire table.

Baseline Behavior Parameter Group

Select in the scrolling list the type of *Baseline Behaviour*. Three choices are available: Append, Zero and Free.

Analogs Control



Analog Parameter Group

This detector has two analog outputs. For each one:

In the *Offset* field, enter the offset value to adjust the baseline.

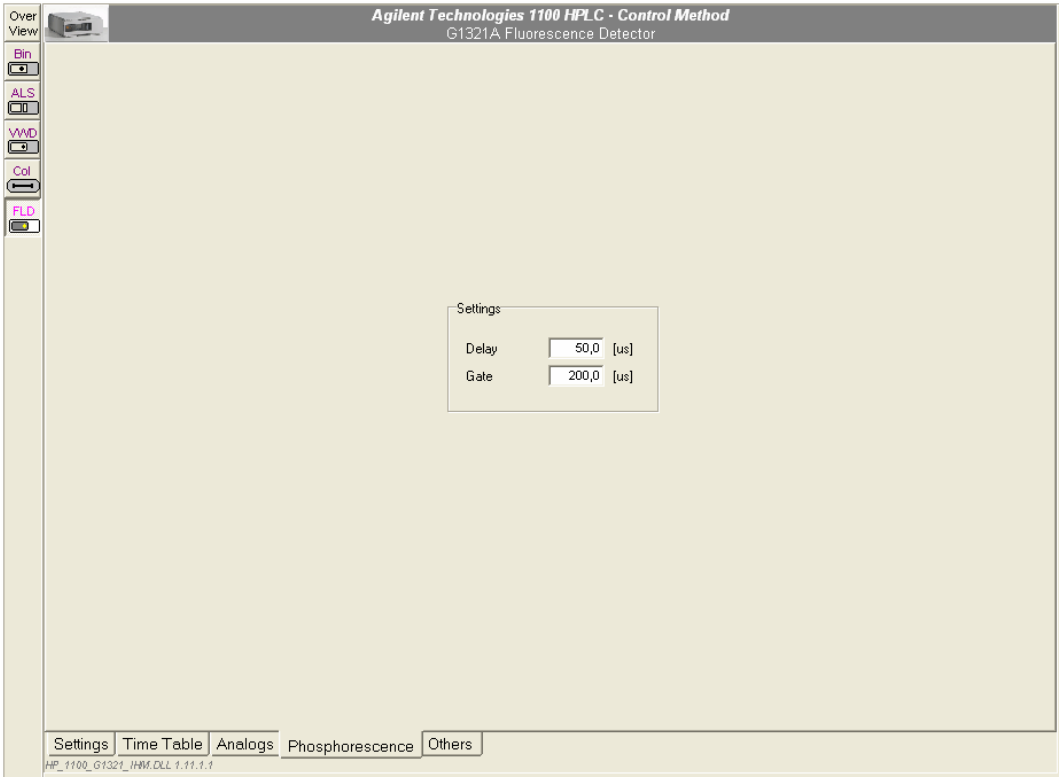
In the *Attenuation* scrolling list, select the attenuation value. The available values are: 0.195 LU, 0.391 LU, 0.781 LU, 1.563 LU, 3.125 LU, 6.25 LU, 12.5 LU, 25 LU, 50 LU, 100 LU, 200.00 LU, 400.00 LU, 800.00 LU, 1600.00 LU.

In the *Range* scrolling list, enter the output voltage range value. The available values are: 0.1 Volt Full Scale and 1 Volt Full scale.

In the *Source* scrolling list, select the type of the collected signal. The available choices are: EX1/EM1, EM2/EX2, EM3/EX3, EM4/EX4, sample w/o reference, Reference without sample, Raw sample, Raw reference, Test chromatogram, Analog output test, Board temperature.

Select the *Polarity* of the detector.

Phosphorescence Control

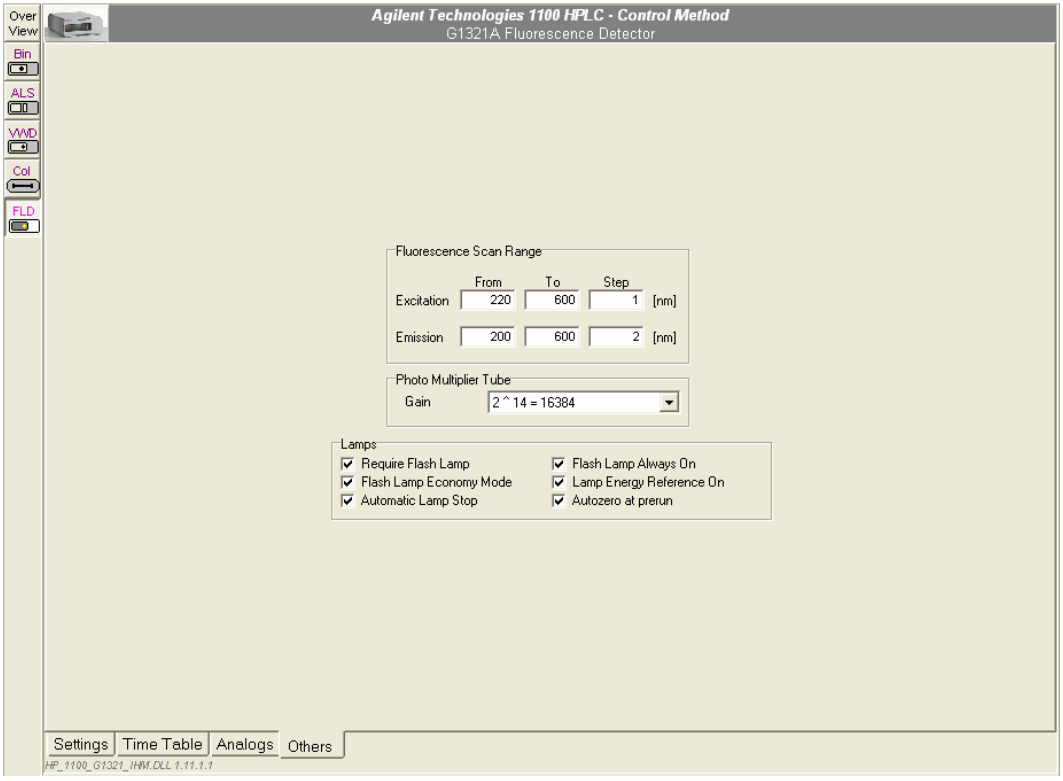


Settings Parameter Group

Enter the *Delay* in the corresponding field.

Enter the *Gate* in the corresponding field.

Others Control



Fluorescence Scan Range Parameter Group

In the fields *Excitation/Emission From* and *Excitation/Emission To* enter the minimum and maximum wavelengths of the spectra.

Enter the *Excitation/Emission Step* in the corresponding field. A small wavelength step will enhance the spectrum resolution.

Photo Multiplier Tube Parameter Group

Select the value of the *Gain* parameter (amplification factor).

Lamps Parameter Group

Check *Require Flash Lamp* if necessary.

Flash Lamp Economy Mode decreases the frequency of the lamp flash.

Automatic Lamp Stop automatically stops the detector's lamp at the end of the run.

Flash Lamp Always On enables permanent flash mode.

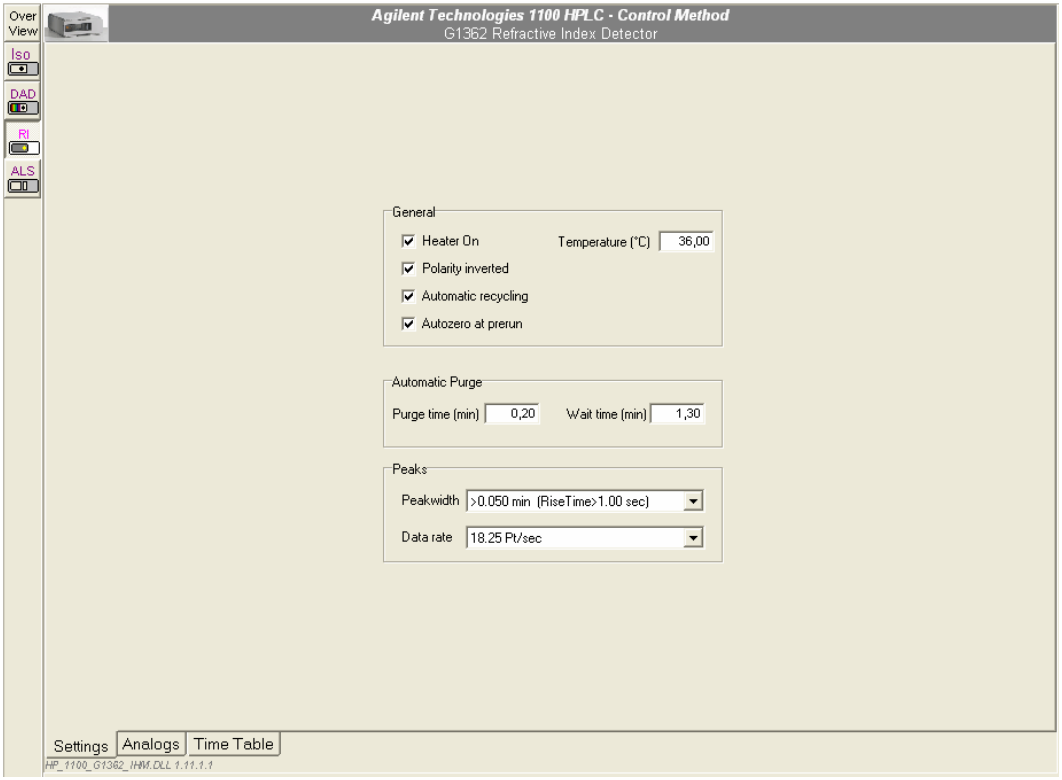
Lamp Energy Reference On configures the signal as a reference.

Autozero At Prerun performs an autozero of the detector before the run.

Control Section for the Agilent LC 1100 Refractive Index Detector (G1362)

Click on the button to display the Agilent Technologies 1100 Retention Index Detector (G1362) control method section. It contains three sub-sections: *Settings, Analogs* and *Time table*. Click on the required sub-section to define the corresponding parameters that will be used during the chromatographic run.

Settings Control



General Parameter Group

Check *Heater On* to turn the heater on.

In the *Temperature* field, enter the value of the optical unit Temperature.

Check *Polarity inverted* to invert the polarity.

Check *Automatic recycling* to switch the recycle valve to the on position after one analysis has been completed and to return it to the off position before the next analysis starts.

Check Autozero at prerun to perform an autozero of the detector just before the run.

Automatic Purge Parameter Group

In the *Purge time* field, enter the time during which the instrument is purged.

In the *Wait time* field, enter the time to wait after a purge.

Peaks Parameter Group

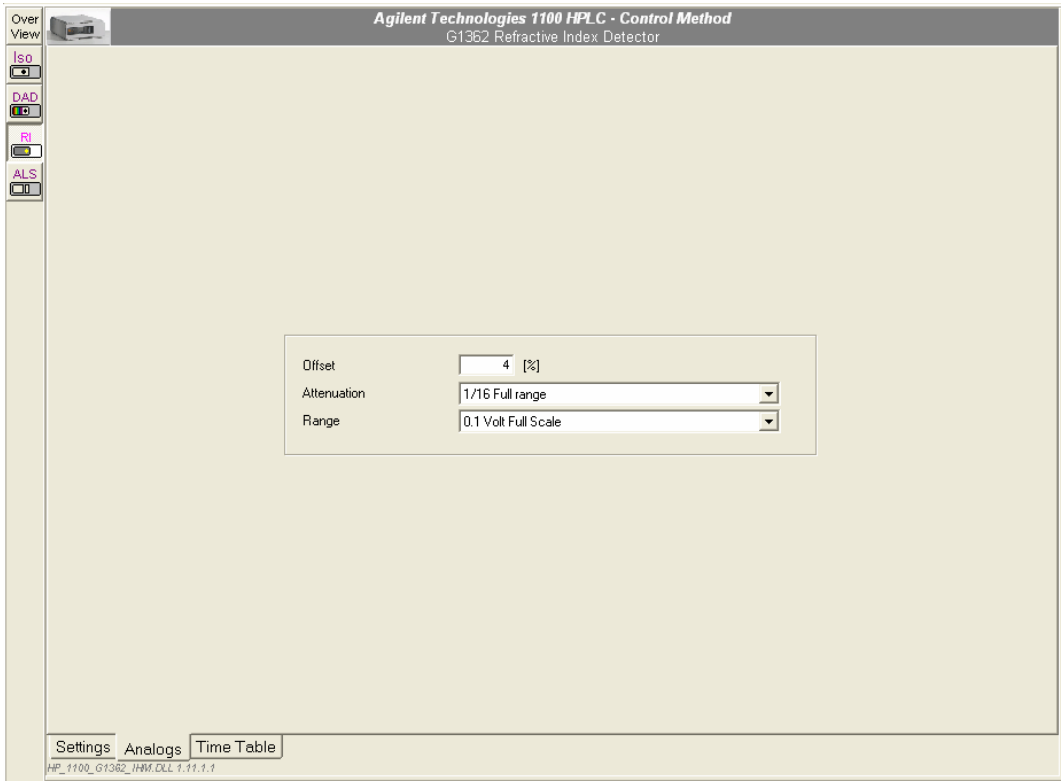
Select the *Peakwidth* value in the scrolling list. This parameter influences the peak detection. A response time is associated with each peakwidth value. The available values are:

<0.005 min (RiseTime<0.12 sec)
>0.005 min (RiseTime>0.12 sec)
>0.010 min (RiseTime>0.25 sec)
>0.025 min (RiseTime>0.5 sec)
>0.05 min (RiseTime>1 sec)
>0.1 min (RiseTime>2 sec)
>0.2 min (RiseTime>4 sec)
>0.4 min (RiseTime>8 sec)

Select the *Data rate* value in the scrolling list. This parameter is associated to the previous ones. The available values are:

36.50 Pt/sec
18.25 Pt/sec
9.12 Pt/sec
4.56 Pt/sec)
2.28 Pt/sec
1.14 Pt/sec

Analogs Control

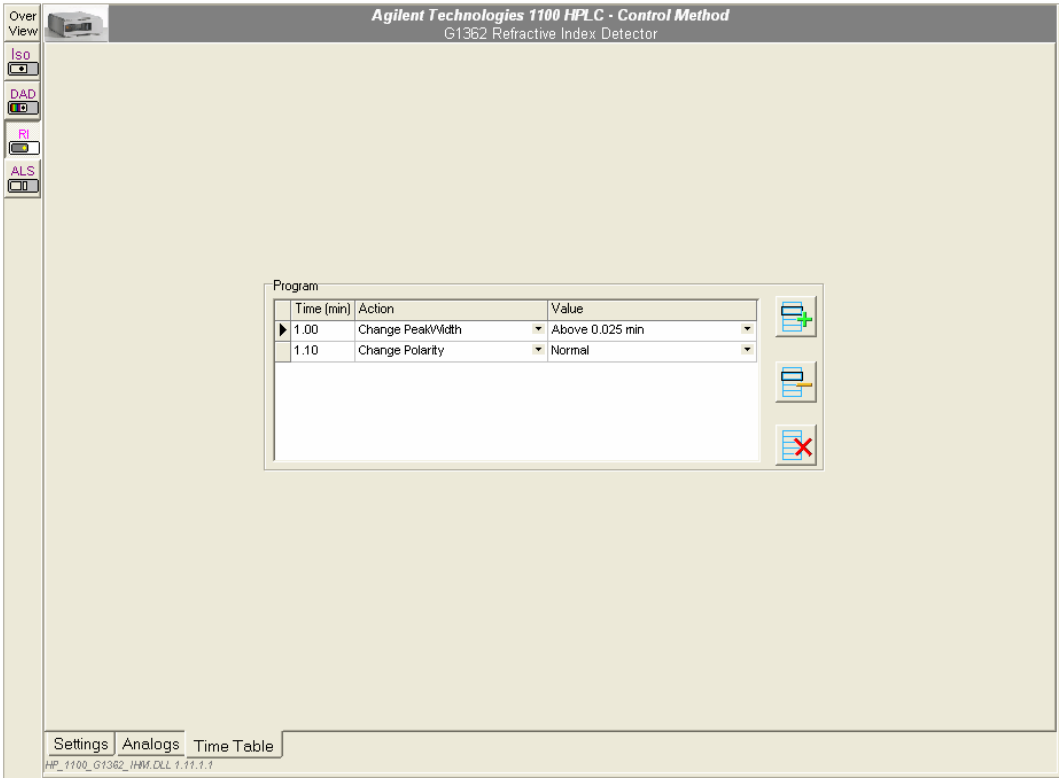


In the *Offset* field, enter the offset value to adjust the baseline.

In the *Attenuation* scrolling list, enter the attenuation value. The available values are: 1/1024 Full range, 1/512 Full range, 1/256 Full range, 1/128 Full range, 1/64 Full range, 1/32 Full range, 1/16 Full range, 1/8 Full range, ¼ Full range, ½ Full range, 1x Full range and 2x Full range.

In the *Range* scrolling list, enter the output voltage range value. The available values are: 0.1 Volt Full Scale and 1 Volt Full scale.

Time Table Control



Program Parameter Group

Program peakwidth and/or the polarity changes during the run. Use the following buttons to edit the table:

to add a line to the table.

to delete a line in the table.

to clear the entire table.

Starting and Viewing an Acquisition

Quick Start and Sequence

Once the instrument control method has been correctly programmed, an analysis can be started. The next section briefly describes how to start an acquisition.

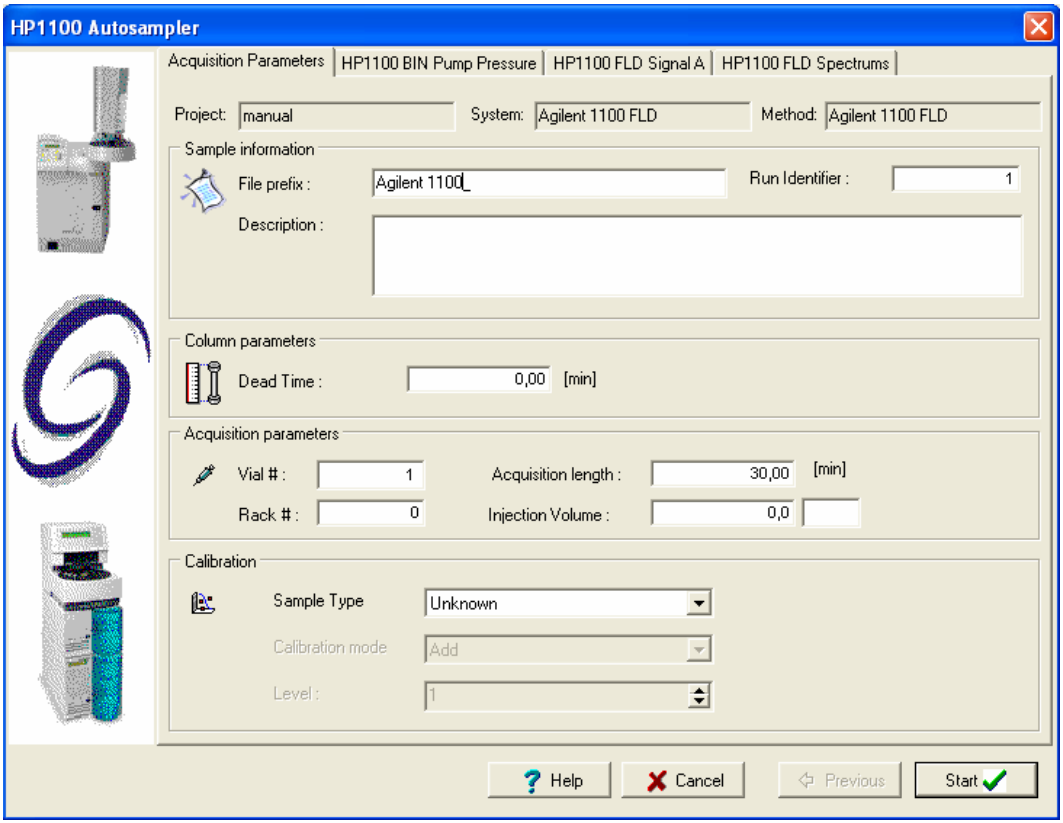
Quick Start (Single Acquisition)

1. Press the button.

   In the ***Quick Start*** window, select the system, the method and optionally the project if connected in "All project" mode.

2. Press the *OK* button.

   The following screen is displayed:



In the *Acquisition parameters* tab, required fields like the *Run Name*, the *Run ID* and the *Acquisition length* must be filled in before starting an analysis. Furthermore, if the system is equipped with an autosampler controlled by the Galaxie Chromatography Data System, the *Injection Volume*, the *Vial* position and the *Rack* number (if required) must be entered.

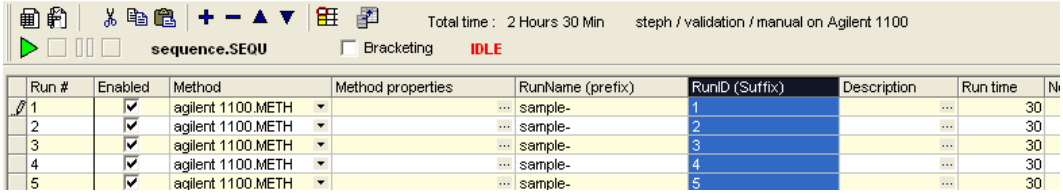
Other parameters associated with each acquisition channel can be entered in the *Channel X* tab.

3. Click on the *Start* button to start the acquisition if the system is a single-injector system or click on the *Next* button if the system is a multiple injector system. In a multiple injector system, the same parameters entered for the first injector must be entered for the other injectors before starting the acquisition.

Sequence

1. To create a sequence, select the ***FILE / NEW SEQUENCE*** menu, and complete the displayed creation wizard screen (refer to the Galaxie Chromatography Data System User's Guide), by entering the system name that will perform the analysis, the number of lines (corresponding to the number of samples), and the sequence name.

2. The sequence is displayed. Complete the sequence information columns (refer to the Galaxie Chromatography Data System User's Guide).



	Run #	Enabled	Method	Method properties	RunName (prefix)	RunID (Suffix)	Description	Run time
	1	☑	agilent 1100.METH		sample-	1		30
	2	☑	agilent 1100.METH		sample-	2		30
	3	☑	agilent 1100.METH		sample-	3		30
	4	☑	agilent 1100.METH		sample-	4		30
	5	☑	agilent 1100.METH		sample-	5		30

The *Method Name*, the *Run Name*, the *Run ID,* and the *Acquisition length* must be filled in before starting the analysis. All these parameters are automatically imported from the acquisition part if defined in the method.

3. Start the sequence by clicking on the button.

NOTE: For more details about how to start an acquisition, refer to the Galaxie Chromatography Data System User's Guide.

Running Acquisition Status

Viewing a Running Acquisition

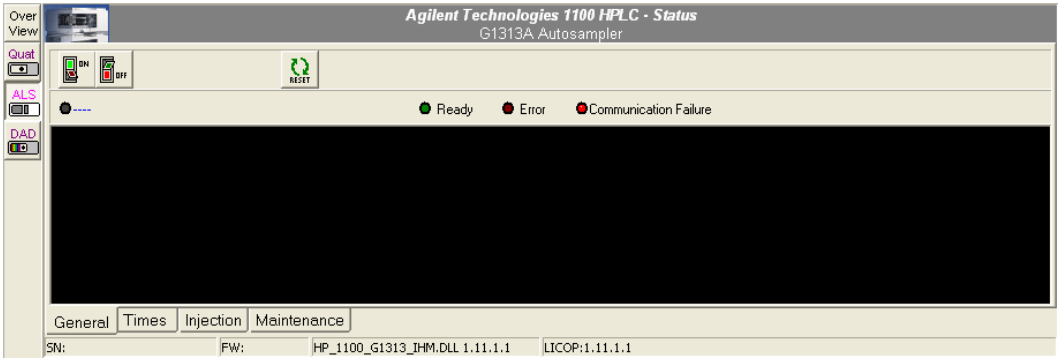
To view a running acquisition, click on the *Systems* tab then select the running system. A window is activated which is composed of two parts: the running chromatogram and the status window where the driver modules are listed.

Status of the Agilent LC 1100 Autosampler (G1313)

Click on the

button to display the Agilent Technologies 1100 Autosampler (G1313) status screen. It contains five sub-sections: *General, Times, Injection* and *Maintenance*. Click on the required sub-section to display the corresponding screen.

General Window



This window allows direct control of the autosampler.

Information about the autosampler status is displayed: Faults, not ready parameters, etc.

The

button turns on all the modules that compose the system.

The

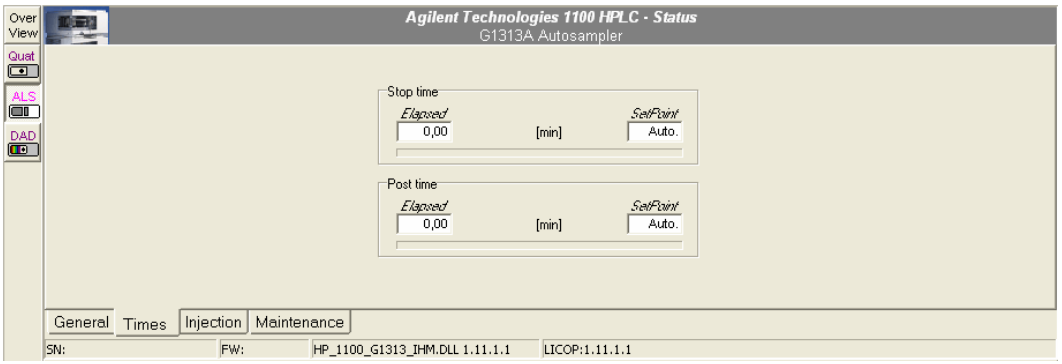
button turns off all the modules that compose the system.

The

button reset the autosampler.

The LED gives information about the general status of the autosampler: *Communication failure, Start Up, Error, and Ready.*

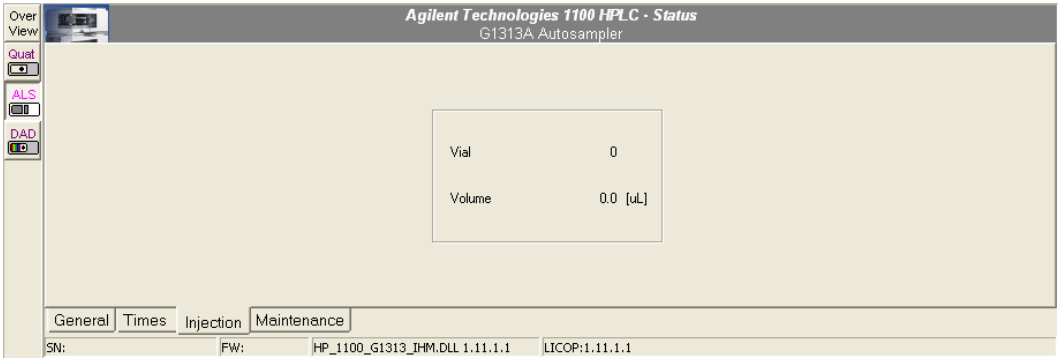
Times Window



This is a read-only window.

The elapsed run time and the elapsed post run time (if any) are displayed.

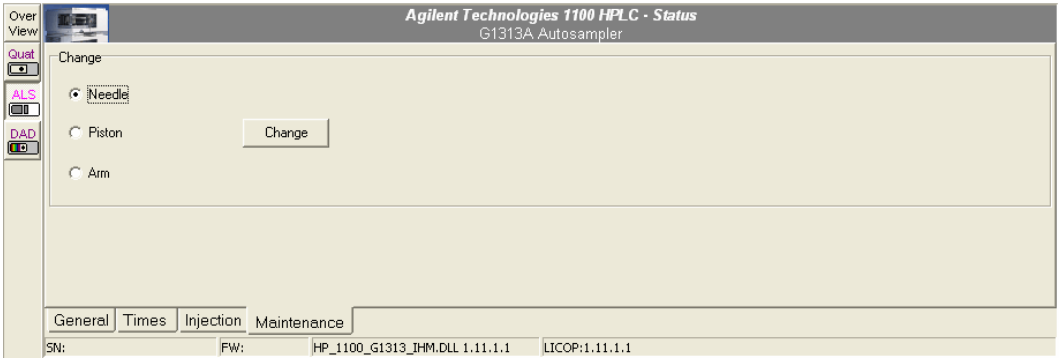
Injection Window



This is a read-only window.

The vial and the injection volume are displayed.

Maintenance Window



This window is used for maintenance operation on the autosampler.

Select with the radio button on which part of the instrument the maintenance will be done and press the Change button. Three choices are available: *Needle, Piston* and *Arm.*

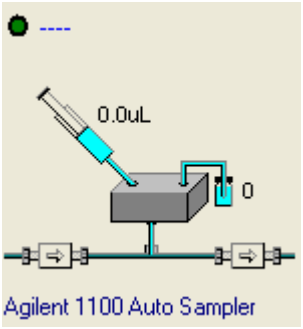
When the maintenance is complete, press the Done button.

Overview Window

Click on the

button: the ***Status Overview*** window is displayed and contains three tabs:

- *General*: displays the synopsis of the instrument, where some current values can be read (state of the instrument, vial injected and volume injected).



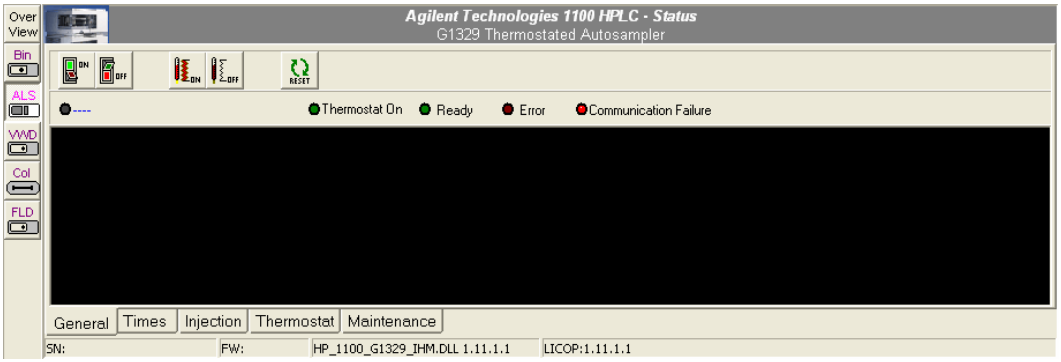
- *Not ready*: contains the not ready information sent by the instrument.
- *Events*: contains the events that have occurred on the instrument.

Status of the Agilent LC 1100 Thermostated Autosampler (G1329)

Click on the

button to display the Agilent Technologies 1100 Thermostated Autosampler (G1329) status screen. It contains six sub-sections: *General, Times, Injection, Thermostat*, *Maintenance and Overview*. Click on the required sub-section to display the corresponding screen.

General Window



This window allows direct control of the autosampler.

Information about the autosampler status is displayed: Faults, not ready parameters, etc.

The button turns on all the modules that compose the system.

The button turns off all the modules that compose the system.

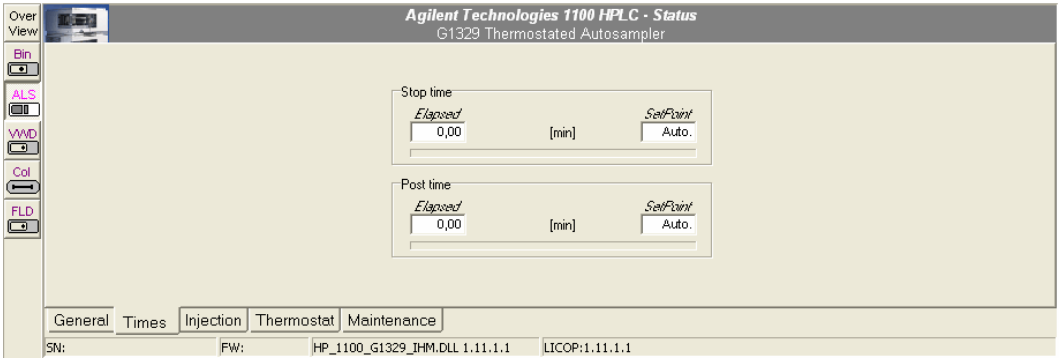
The button turns on the thermostat.

The button turns off the thermostat.

The button reset the autosampler.

The LEDs give information about the general status of the instrument: *Communication failure, Error, Ready, etc.*

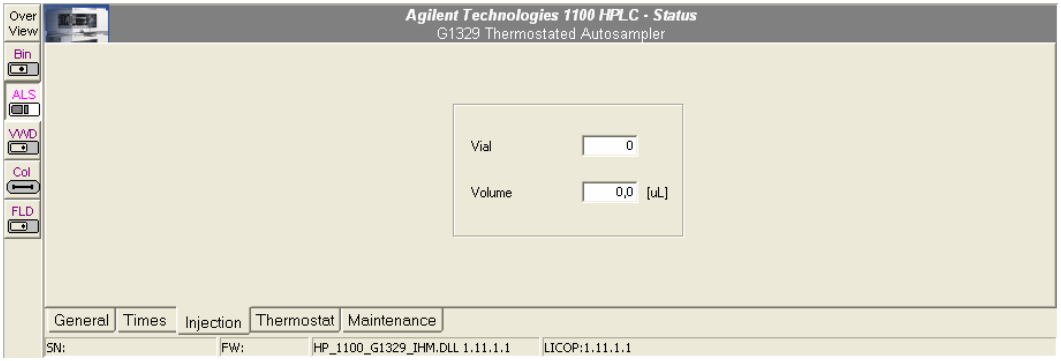
Times Window



This is a read-only window.

The elapsed run time and the elapsed post run time (if any) are displayed.

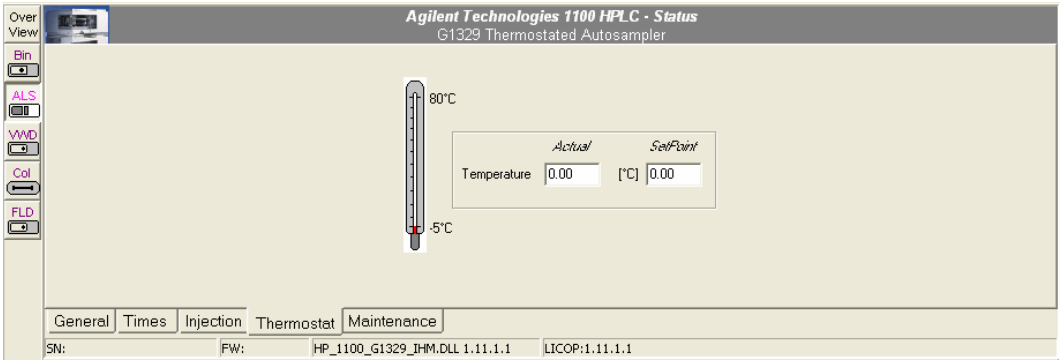
Injection Window



This is a read-only window.

The vial and the injection volume are displayed.

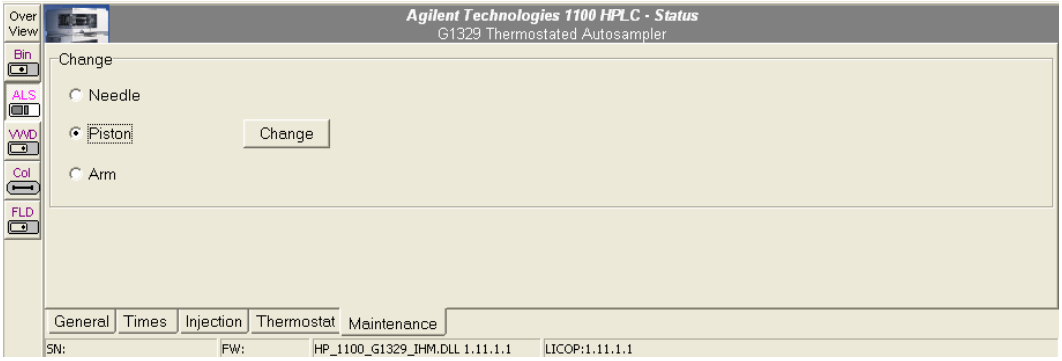
Thermostat Window



This is a read-only window.

The actual temperature and the setpoint temperature of the heated area are displayed.

Maintenance Window



This window is used for maintenance operation on the autosampler.

Select with the radio button on which part of the instrument the maintenance will be done and press the Change button. Three choices are available: *Needle, Piston* and *Arm.*

When the maintenance is complete, press the Done button.

Overview Window

Click on the

button: the ***Status Overview*** window is displayed and contains three tabs:

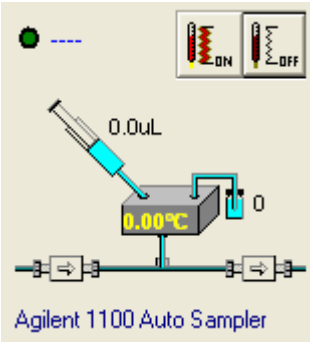
- *General*: displays the synopsis of the instrument, where some current values can be read (state of the instrument, vial injected, temperature and volume injected).

  The

button turns on the thermostat.

  The

button turns off the thermostat.



- *Not ready*: contains the not ready information sent by the instrument.

- *Events*: contains the events that have occurred on the instrument.

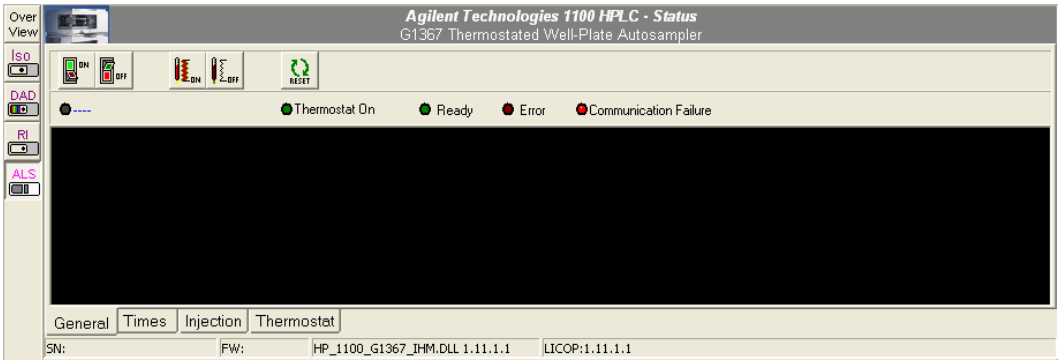
Status of the Agilent LC 1100 Well Plate Autosampler (G1367)

Click on the

button to display the Agilent Technologies 1100 Well Plate Autosampler (G1367) status screen. It contains five sub-sections: *General, Times, Injection, Thermostat* and

Overview. Click on the required sub-section to display the corresponding screen.

General Window



This window allows direct control of the autosampler.

Information about the autosampler status is displayed: Faults, not ready parameters, etc.

The

button turns on all the modules that compose the system.

The

button turns off all the modules that compose the system.

The

button reset the autosampler.

The

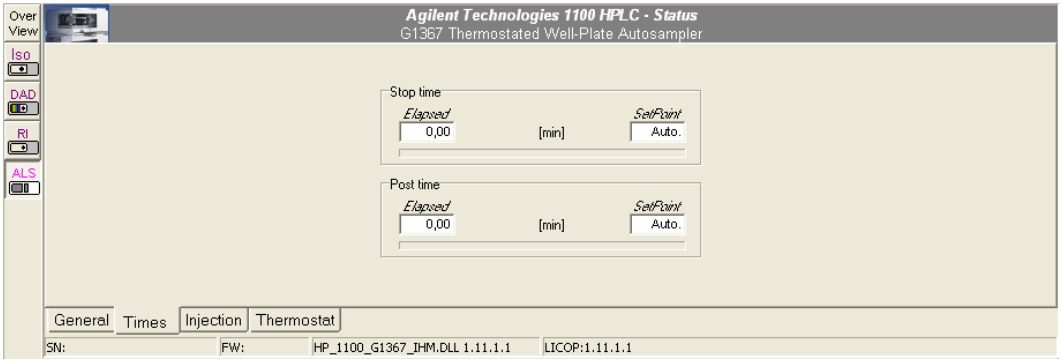
button turns on the thermostat.

The

button turns off the thermostat.

The LEDs give information about the general status of the instrument: *Communication failure, Error, Ready, etc.*

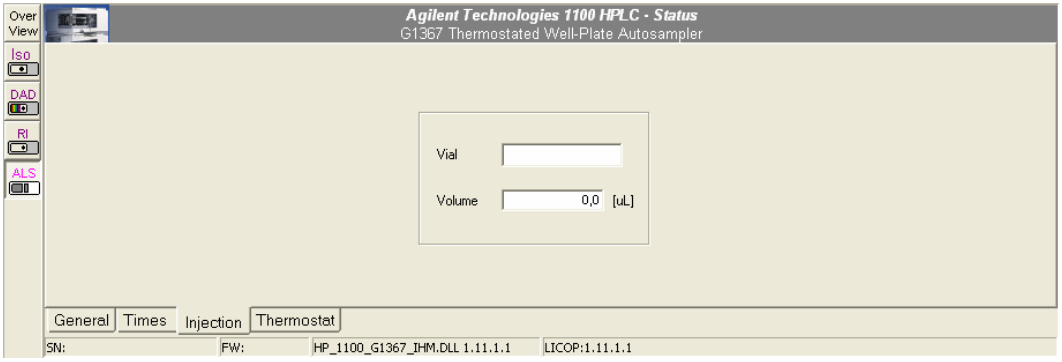
Times Window



This is a read-only window.

The elapsed run time and the elapsed post run time (if any) are displayed.

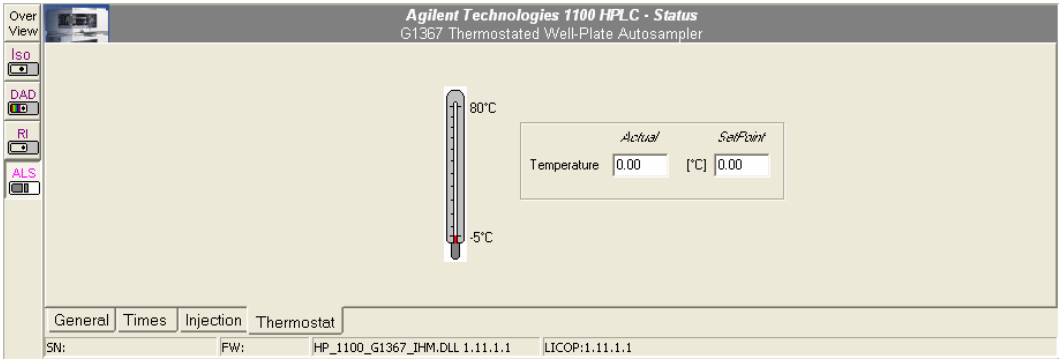
Injection Window



This is a read-only window.

The vial and the injection volume are displayed.

Thermostat Window



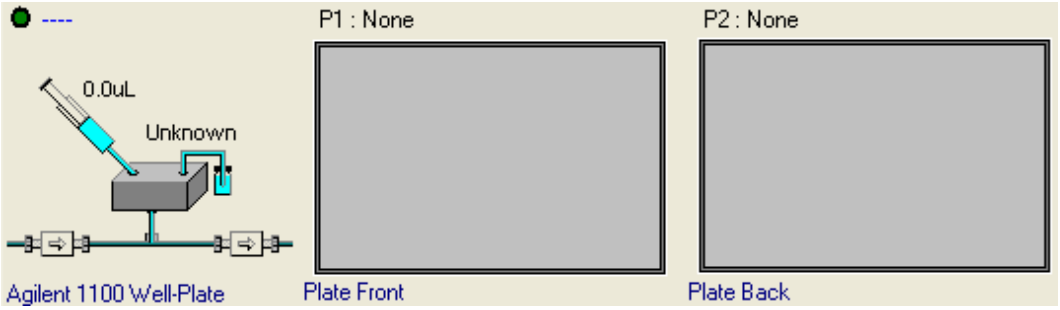
This is a read-only window.

The actual temperature and the setpoint temperature of the heated area are displayed.

Overview Window

Click on the Over View button: the ***Status Overview*** window is displayed and contains three tabs:

- *General*: displays the synopsis of the instrument, where some current values can be read (state of the instrument, vial injected, temperature and volume injected).



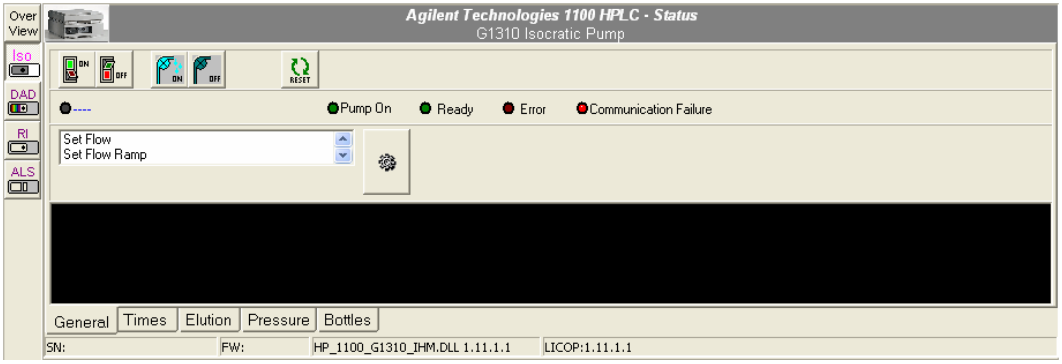
- *Not ready*: contains the not ready information sent by the instrument.
- *Events*: contains the events that have occurred on the instrument.

Status of the Agilent LC 1100 Isocratic Pump (G1310)

Click on the

button to display the Agilent Technologies 1100 Isocratic Pump (G1310) status screen. It contains six sub-sections: *General, Times, Elution, Pressure, Bottle*, and *Overview*. Click on the required sub-section to display the corresponding screen.

General Window



This window allows direct control of the pump.

Information about the pump is displayed: Faults, not ready parameters, etc.

The

button turns on all the modules that compose the system.

The

button turns off all the modules that compose the system.

The

button turns on the pump module only.

The

button turns off the pump module only.

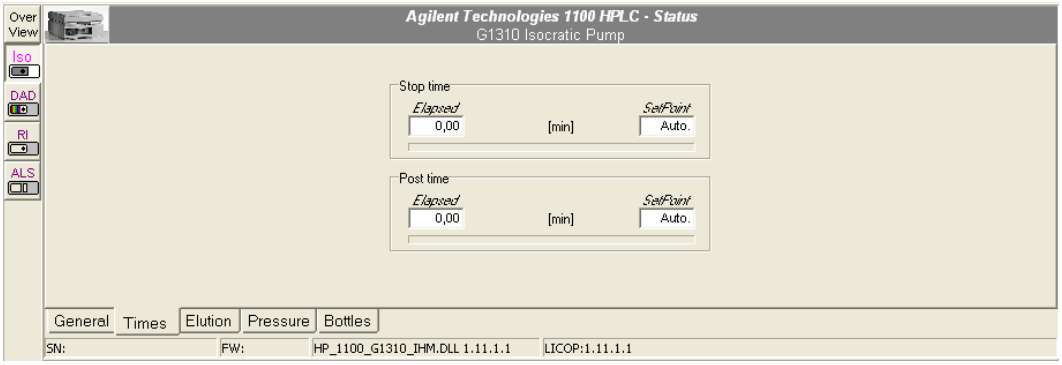
The

button reset the pump module.

The LED's give information about the general status of the instrument: *Communication failure, Error, Ready, etc.*

By clicking on *Set Flow* or *Set Flow Ramp*, another field will appear allowing you to modify the current values. Apply the new values with the button.

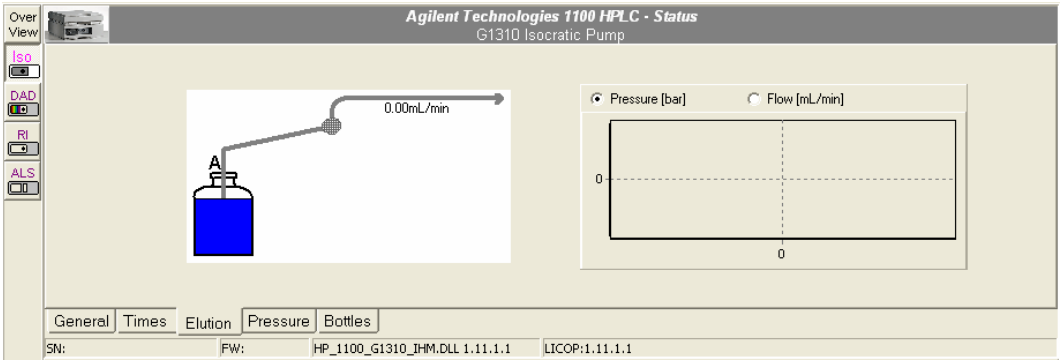
Times Window



This is a read-only window.

The elapsed run time and the elapsed post run time (if any) are displayed.

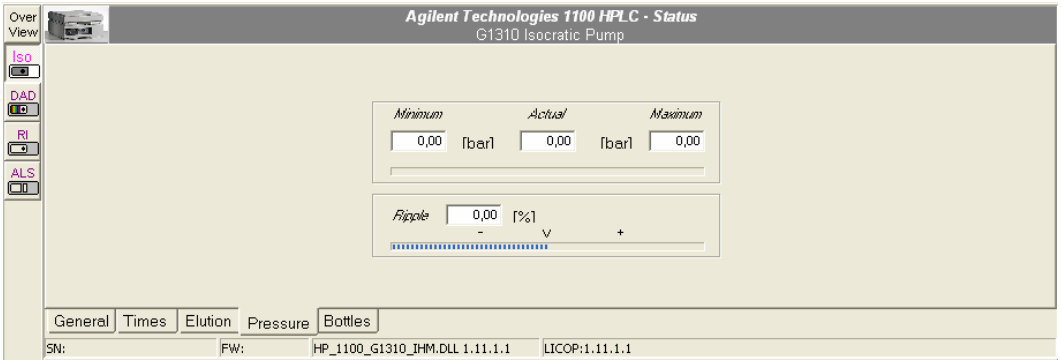
Elution Window



This is a read-only window.

The actual flow rate and the pressure evolution or the flow evolution is displayed in this screen, according to the user choice.

Pressure Window

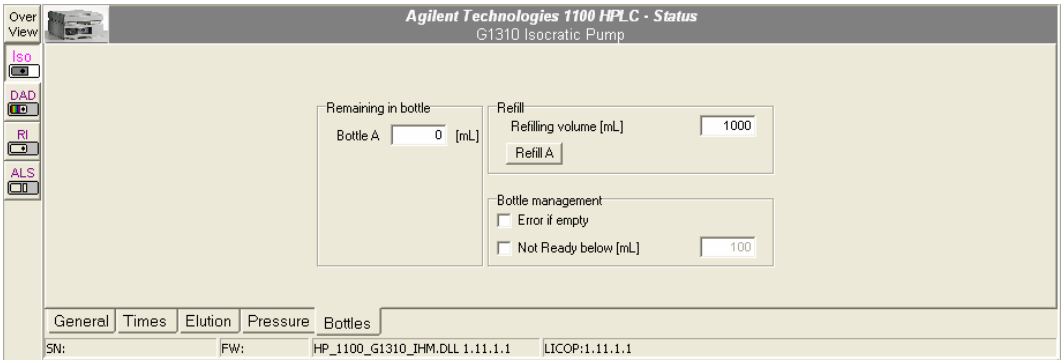


This is a read-only window.

The *Minimum, Actual* and *Maximum* pressures are displayed.

The *Ripple* value is also displayed.

Bottles Window



Remaining in Bottle Parameter Group

The remaining volume of the bottle is indicated in the field *Bottle A*.

Refill Parameter Group

Enter the *Refilling volume* and click on *Refill A* to refill the bottle A.

Bottle Management Parameter Group

Check *Error if empty* to place the Agilent 1100 in error state when the eluent bottle is empty.

Check *Not Ready Below* to place the instrument in not ready mode when the remaining volume is less than the entered value.

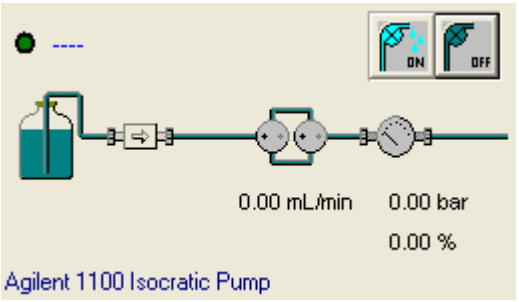
Overview Window

Click on the Over View button: the ***Status Overview*** window is displayed and contains three tabs:

- *General*: displays the synopsis of the instrument, where some current values can be read (state of the instrument, pressure, ripple and flow).

The button turns on the pump module only.

The button turns off the pump module only.

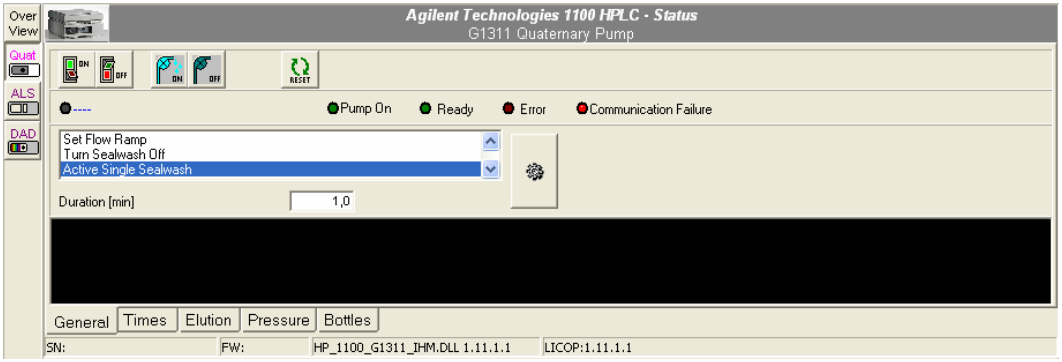


- *Not ready*: contains the not ready information sent by the instrument.
- *Events*: contains the events that have occurred on the instrument.

Status of the Agilent LC 1100 Quaternary Pump (G1311)

Click on the button to display the Agilent Technologies 1100 Quaternary Pump (G1311) status screen. It contains six sub-sections: *General, Times, Elution, Pressure, Bottles* and *Overview*. Click on the required sub-section to display the corresponding screen.

General Window



This window allows direct control of the pump.

Information about the pump status is displayed: Faults, not ready parameters, etc.

The

button turns on all the modules that compose the system.

The

button turns off all the modules that compose the system.

The

button turns on the pump module only.

The

button turns off the pump module only.

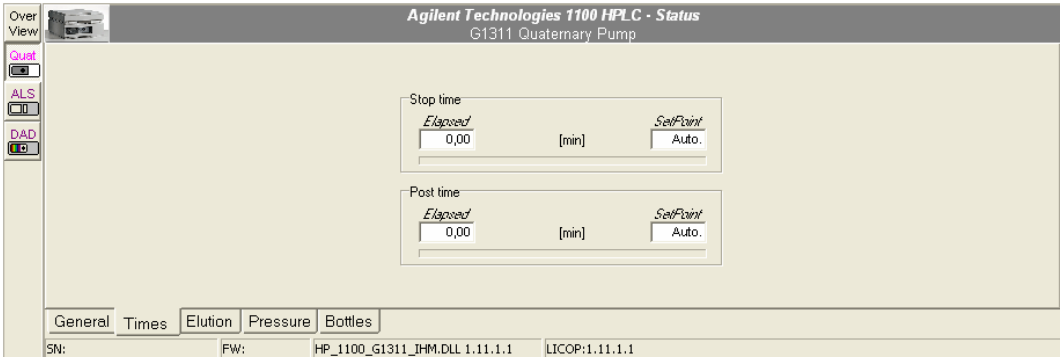
The

button reset the pump module.

The LED's give information about the general status of the instrument: *Communication failure, Error, Ready, etc.*

By clicking on *Set Flow, Set Composition*, *Set Flow Ramp, Turn Seal wash Off or Active Single Seal Wash,* another field will appear allowing you to modify the current values. Apply the new values with the button.

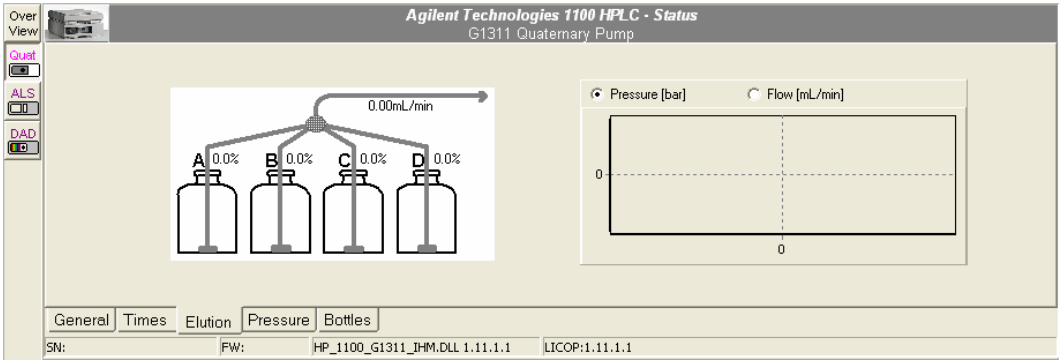
Times Window



This is a read-only window.

The elapsed run time and the elapsed post run time (if any) are displayed.

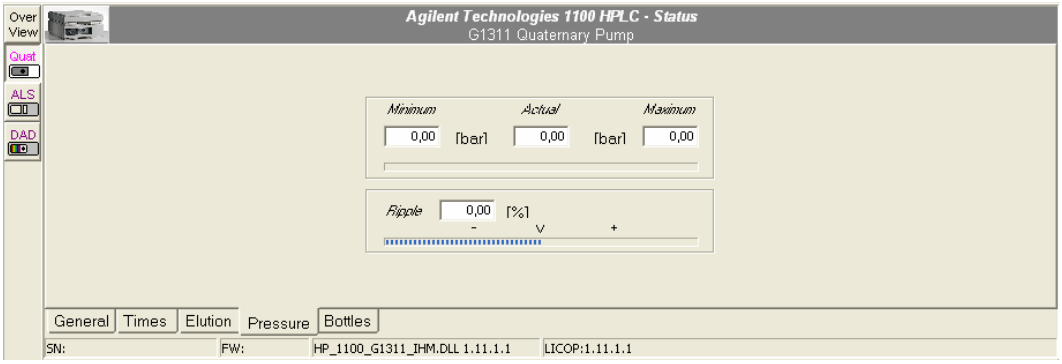
Elution Window



This is a read-only window.

The actual flow rate and the percentages of each solvent in the mobile phase are displayed. According to the user choice, the pressure or the flow evolution is plotted against time in this screen.

Pressure Window

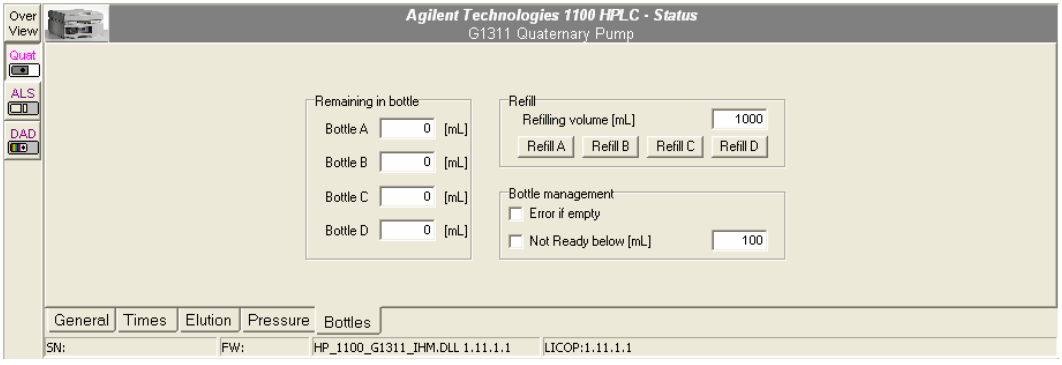


This is a read-only window.

The *Minimum, Actual* and *Maximum* pressures are displayed.

The *Ripple* value is also displayed.

Bottles Window



Remaining in Bottle Parameter Group

The remaining volume of each bottle is indicated in the fields *Bottle A, Bottle B, Bottle C and Bottle D*.

Refill Parameter Group

Enter the *Refilling volume* and click on *Refill* button to refill each bottle.

Bottle Management Parameter Group

Check *Error if empty* to place the Agilent 1100 in error state when the eluent bottle is empty.

Check *Not Ready Below* to place the instrument in not ready mode when the remaining volumes are less than the values entered.

Overview Window

Click on the

button: the ***Status Overview*** window is displayed and contains three tabs:

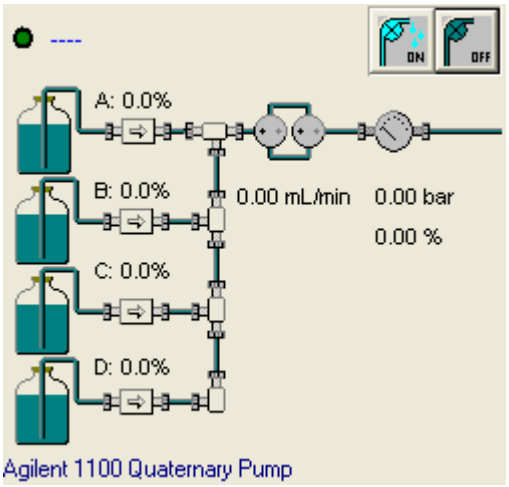
- *General*: displays the synopsis of the instrument, where some current values can be read (state of the instrument, pressure, ripple and flow).

The

button turns on the pump module only.

The

button turns off the pump module only.



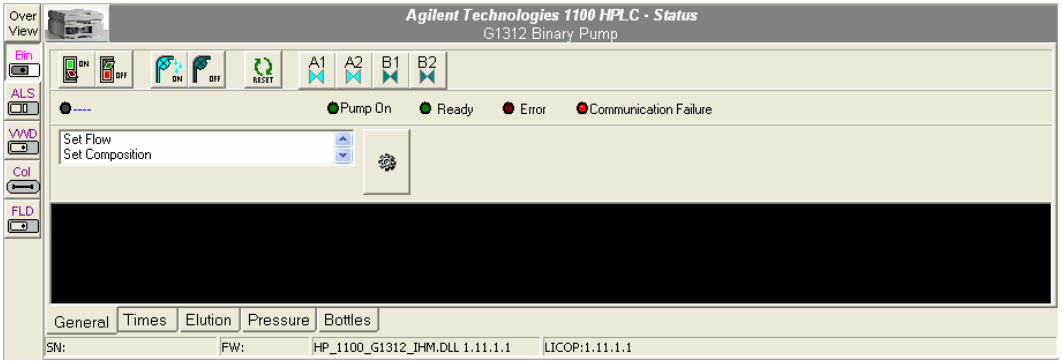
- *Not ready*: contains the not ready information sent by the instrument.
- *Events*: contains the events that have occurred on the instrument.

Status of the Agilent LC 1100 Binary Pump (G1312)

Click on the

button to display the Agilent Technologies 1100 Binary Pump (G1312) status screen. It contains six sub-sections: *General, Times, Elution, Pressure, Bottles* and *Overview*. Click on the required sub-section to display the corresponding screen.

General Window



This window allows direct control of the pump.

Information about the pump status is displayed: Faults, not ready parameters, etc.

The button turns on all the modules that compose the system.

The button turns off all the modules that compose the system.

The button turns on the pump module only.

The button turns off the pump module only.

The button reset the pump module.

The button activates the A1 channel of the Solvent Selection Valve A.

The button activates the A2 channel of the Solvent Selection Valve A.

The

button activates the B1 channel of the Solvent Selection Valve B.

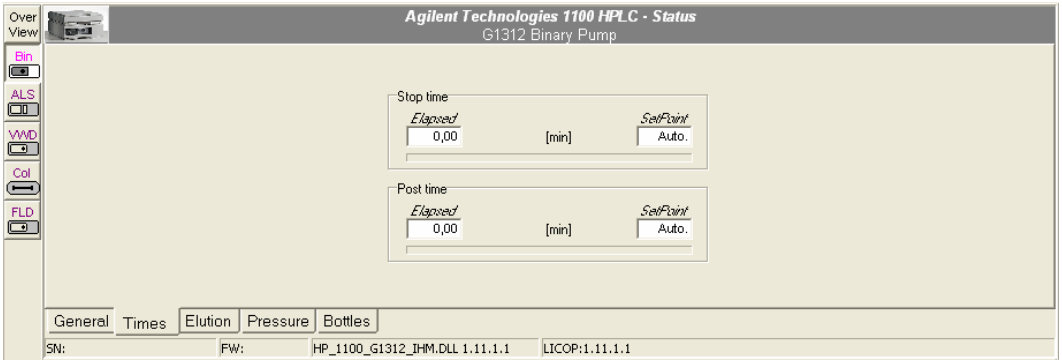
The

button activates the B2 channel of the Solvent Selection Valve B.

The LED's give information about the general status of the instrument: *Communication failure, Error, Ready, etc.*

By clicking on *Set Flow* or *Set Composition*, another field will appear allowing you to modify the current values. Validate the new values with the button.

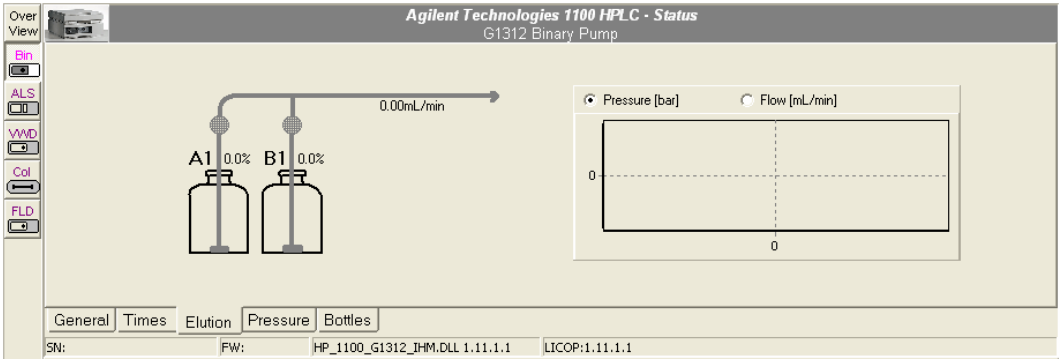
Times Window



This is a read-only window.

The elapsed run time and the elapsed post run time (if any) are displayed.

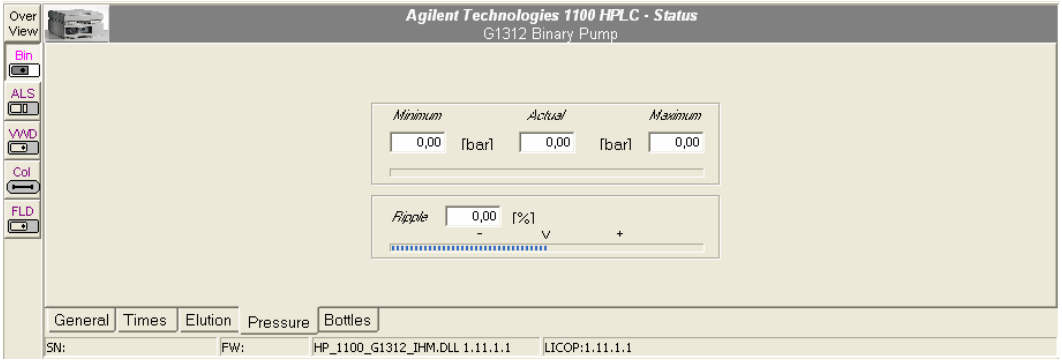
Elution Window



This is a read-only window.

The actual flow rate and the percentages of each solvent in the mobile phase are displayed. According to the user choice, the pressure or the flow is plotted against time on this screen.

Pressure Window

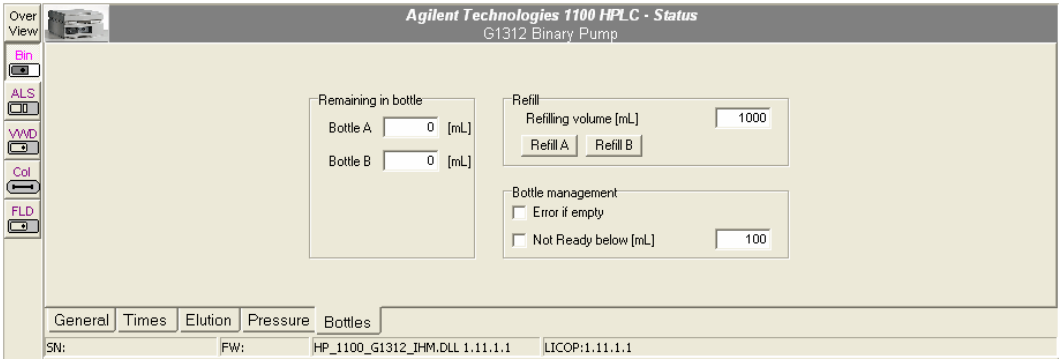


This is a read-only window.

The *Minimum, Actual* and *Maximum* pressures are displayed.

The *Ripple* value is also displayed.

Bottles Window



Remaining in Bottle Parameter Group

The remaining volume of each bottle is indicated in the fields *Bottle A and Bottle B*.

Refill Parameter Group

Enter the *Refilling volume* and click on *Refill* to refill each bottle.

Bottle Management Parameter Group

Check *Error if empty* to place the Agilent 1100 in error state when the eluent bottle is empty.

Check *Not Ready Below* to place the instrument in not ready mode when the remaining volumes are less than the values entered.

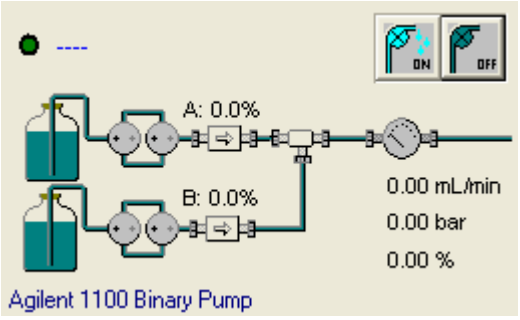
Overview Window

Click on the Over View button: the ***Status Overview*** window is displayed and contains three tabs:

- *General*: displays the synopsis of the instrument, where some current values can be read (state of the instrument, pressure, ripple and flow).

The button turns on the pump module only.

The button turns off the pump module only.



- *Not ready*: contains the not ready information sent by the instrument.

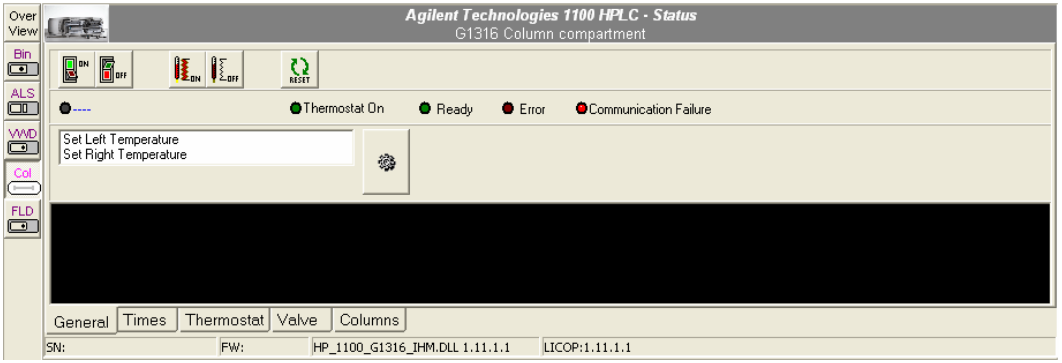
- *Events*: contains the events that have occurred on the instrument.

Status of the Agilent LC 1100 Column Compartment (G1316)

Click on the

button to display the Agilent Technologies 1100 Column Compartment (G1316) status screen. It contains six sub-sections: *General, Times, Thermostat, Valve, Columns* and *Overview*. Click on the required sub-section to display the corresponding screen.

General Window



This window allows direct control of the column compartments.

Information about the column compartment status is displayed: Faults, not ready parameters, etc.

The button turns on all the modules that compose the system.

The button turns off all the modules that compose the system.

The button turns on the column compartment heater.

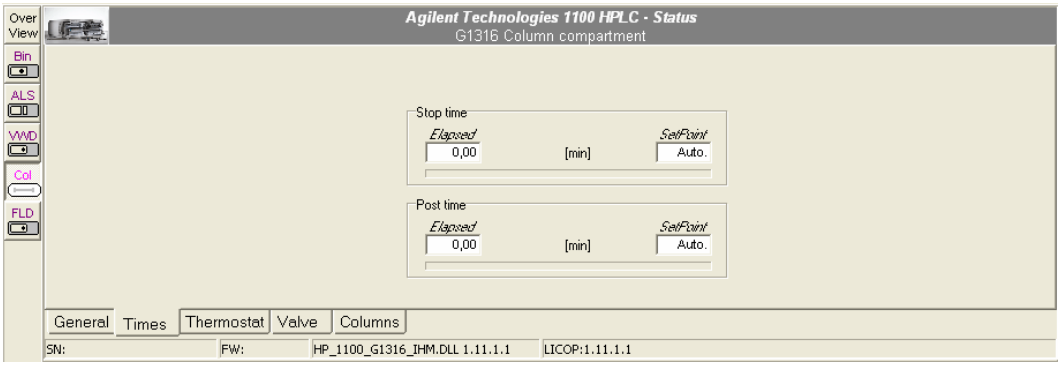
The button turns off the column compartment heater.

The button reset the column compartment heater.

The LED's give information about the general status of the instrument: *Communication failure, Error, Ready, etc.*

Select *Set Left (*or *Right) temperature*, then enter the desired temperature in the *Left (*or *Right) temperature* field and click on the button to send the new temperature to the instrument.

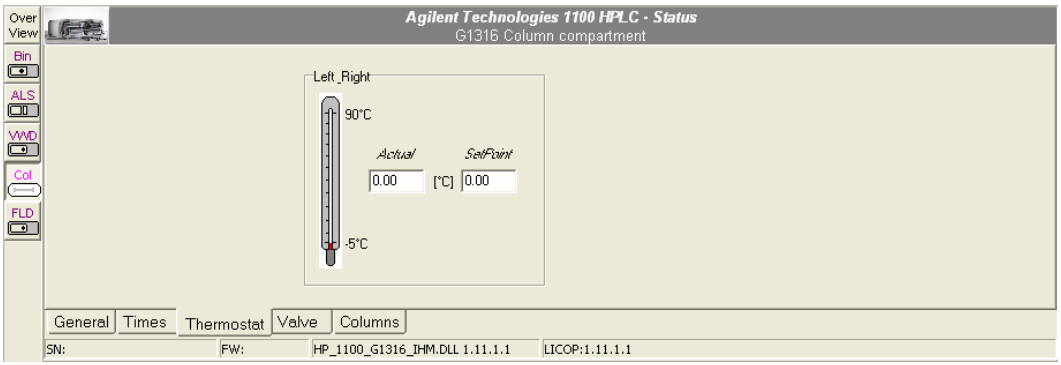
Times Window



This is a read-only window.

The elapsed run time and the elapsed post run time (if any) are displayed

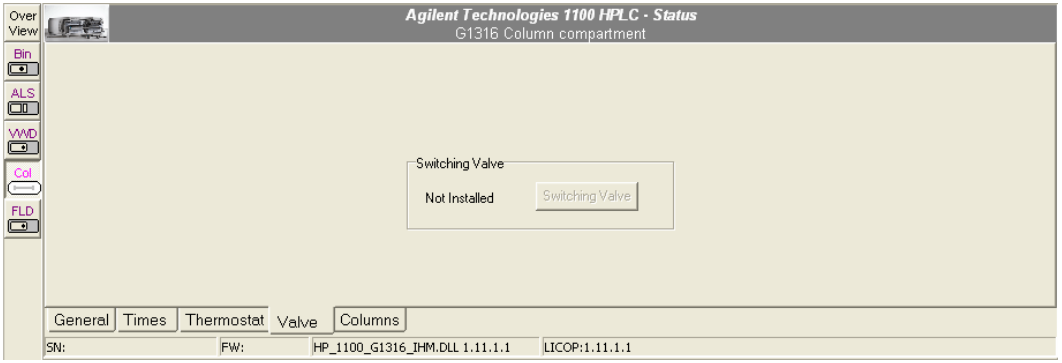
Thermostat Window



This is a read-only window.

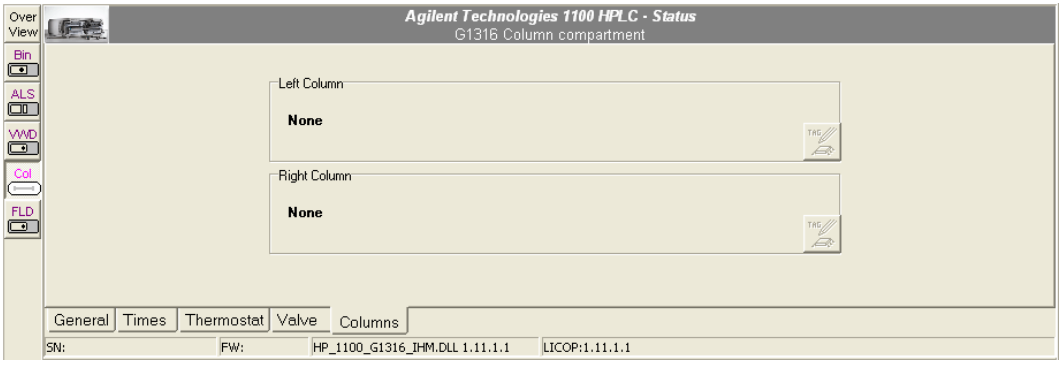
The actual and setpoint temperatures for the right and left compartments are displayed

Valve Window



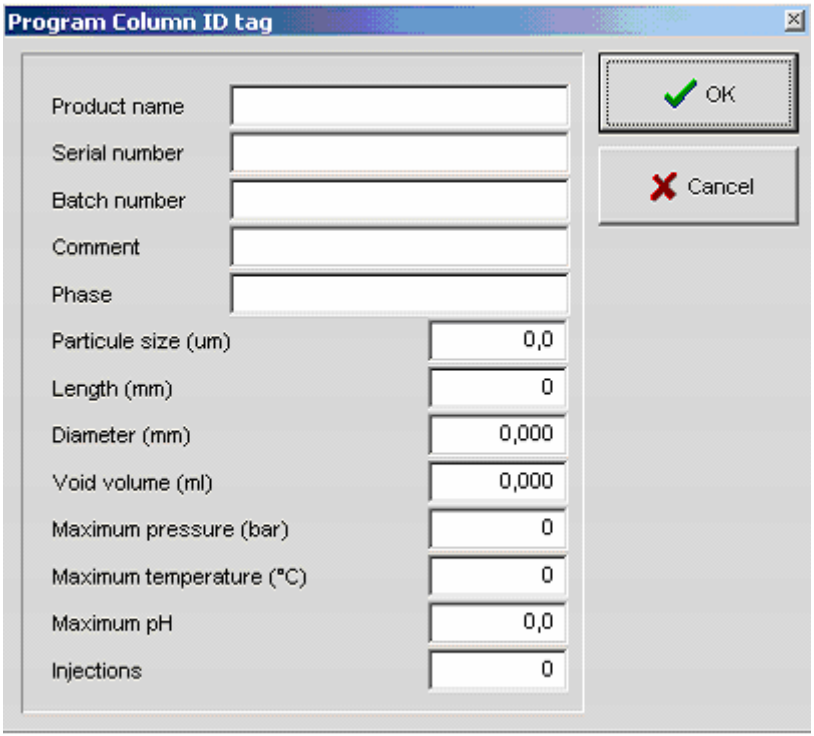
The current valve position is displayed and can be changed from this screen.

Column Window



The current tagID properties are displayed and can be changed from this screen.

To program the tagID, press the button. The following screen is displayed that allows the user to program the tagID.



Please note that the *Injections* field is automatically incremented by one after each injection of the system.

Overview Window

Click on the Over View button: the ***Status Overview*** window is displayed and contains three tabs:

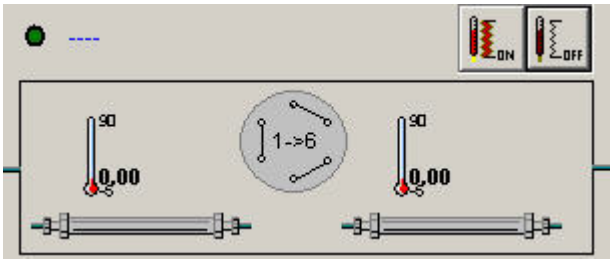
- *General*: displays the synopsis of the instrument, where some current values can be read (state of the instrument, temperatures and valve position).

The

button turns on the column compartment heater.

The

button turns off the column compartment heater.

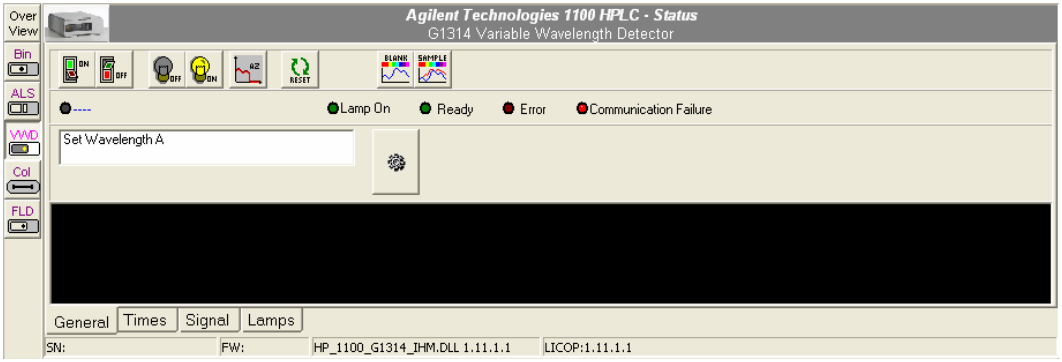


- *Not ready*: contains the not ready information sent by the instrument.
- *Events*: contains the events that have occurred on the instrument.

Status of the Agilent LC 1100 Variable Wavelength Detector (G1314)

Click on the button to display the Agilent Technologies 1100 Variable Wavelength Detector (G1314) status screen. It contains five sub-sections: *General, Times, Signal*, *Lamps* and *Overview*. Click on the required sub-section to display the corresponding screen.

General Window



This window allows direct control of the detector.

Information about the detector status is displayed: Faults, not ready parameters, etc.

The

button turns on all the modules that compose the system.

The

button turns off all the modules that compose the system.

The

button switches on the detector lamp.

The

button switches off the detector lamp.

The

button defines a blank spectrum. This spectrum will be subtracted from the sample spectrum.

The

button allows the user to define a sample spectrum. If a blank spectrum has been defined, it will be subtracted to the sample spectrum.

The

button autozeros the detector.

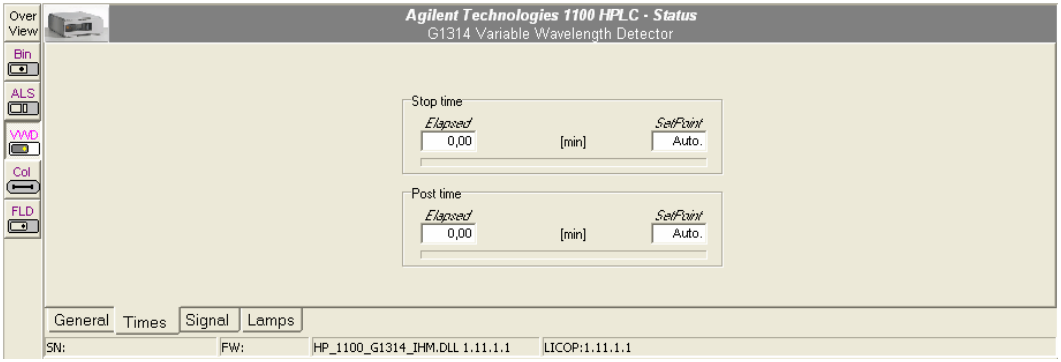
The

button reset the detector module.

The LED's give information about the general status of the instrument: *Communication failure, Error, Ready, etc.*

Select *Set Wavelength A*, then enter the desired Wavelength in the *Wavelength* field and click on the button to send the new wavelength to the instrument.

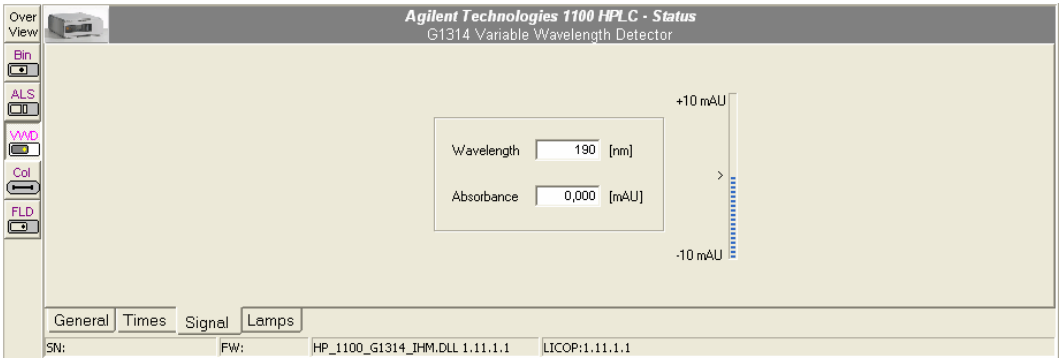
Times Window



This is a read-only window.

The elapsed run time and the elapsed post run time (if any) are displayed.

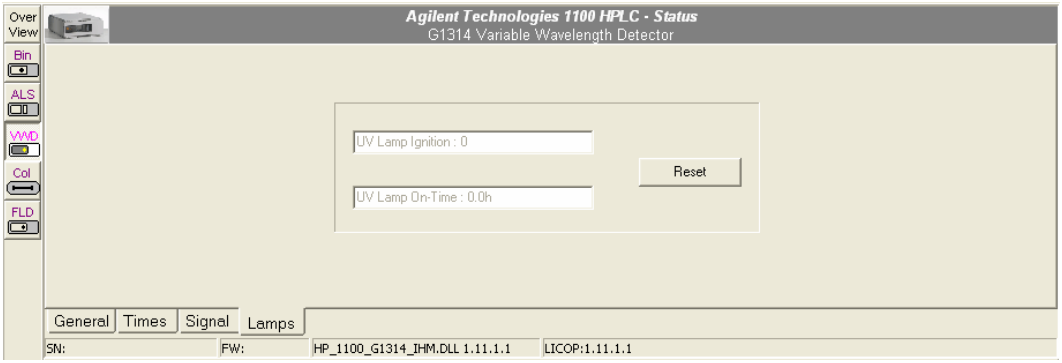
Signal Window



This is a read-only window.

The current wavelength and absorbance are displayed.

Lamps Window



This is a read-only window.

The UV Lamp Ignition and On-Time are displayed.

When the lamp is changed, reset the counters by pressing the reset button.

Overview Window

Click on the Over View button: the ***Status Overview*** window is displayed and contains three tabs:

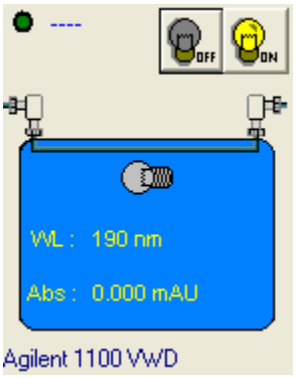
- *General*: displays the synopsis of the instrument, where some current values can be read (state of the instrument, wavelength and absorbance).

The

button switches on the detector lamp.

The

button switches off the detector lamp.



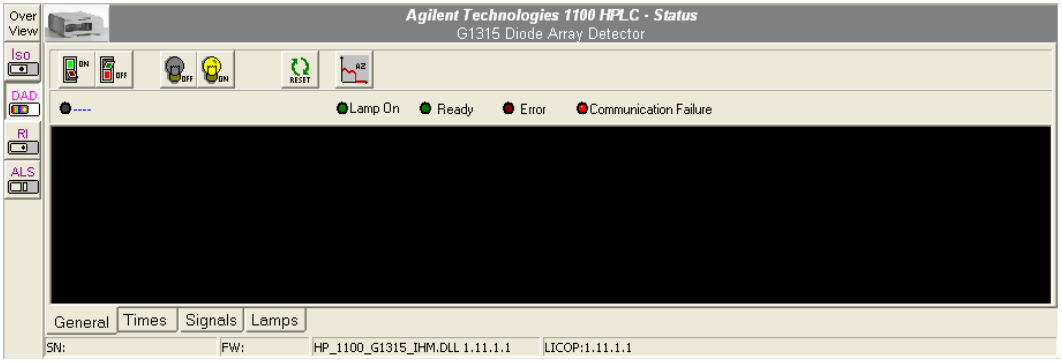
- *Not ready*: contains the not ready information sent by the instrument.
- *Events*: contains the events that have occurred on the instrument.

Status of the Agilent LC 1100 Diode Array Detector (G1315)

Click on the

button to display the Agilent Technologies 1100 Diode Array Detector (G1315) status screen. It contains five sub-sections: *General, Times, Signals, Lamps* and *Overview*. Click on the required sub-section to display the corresponding screen.

General Window



This window allows direct control of the detector.

Information about the detector status is displayed: Faults, not ready parameters, etc.

The

button turns on all the modules that compose the system.

The

button turns off all the modules that compose the system.

The

button switches on the detector lamp.

The

button switches off the detector lamp.

The

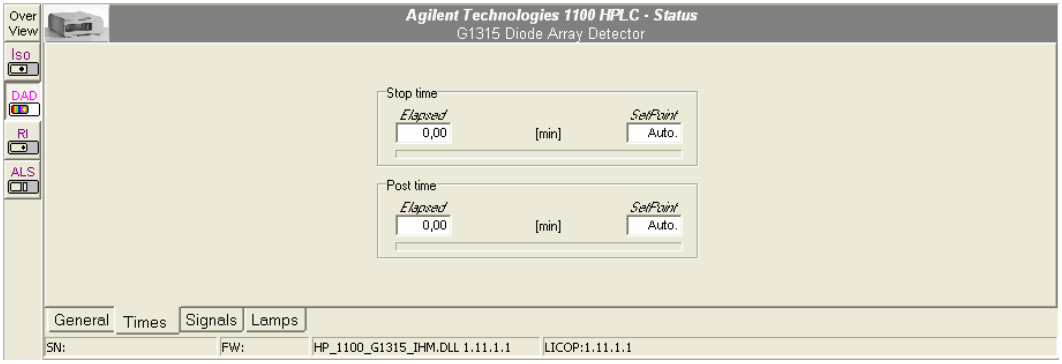
button reset the detector module.

The

button autozeros the detector.

The LED's give information about the general status of the instrument: *Communication failure, Error, Ready, etc.*

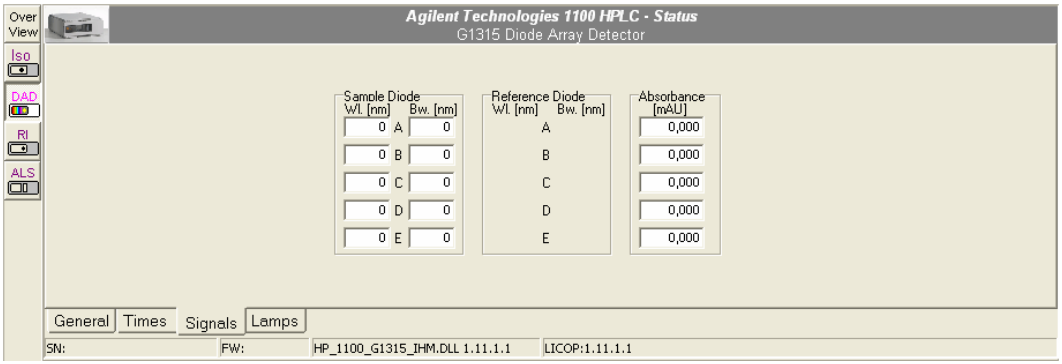
Times Window



This is a read-only window.

The elapsed run time and the elapsed post run time (if any) are displayed.

Signals Window

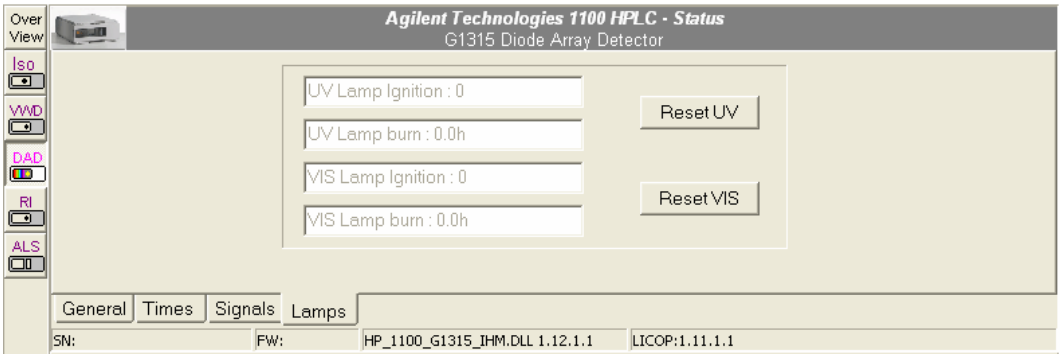


In the *Sample Diode* field are displayed the working wavelengths (*Wl*) and their bandwidths (*Bw*) for each channel.

The *Reference Diode* field showing the reference wavelengths and their bandwidths for each channel is not active.

The *Absorbance* field displays the current absorbance values of each channel.

Lamps Window



This is a read-only window.

The *UV* and *VIS Lamp Ignition* and *burn* are displayed.

When a lamp is changed, reset the counters by pressing the *Reset UV* or *Reset VIS* button.

Overview Window

Click on the Over View button: the ***Status Overview*** window is displayed and contains three tabs:

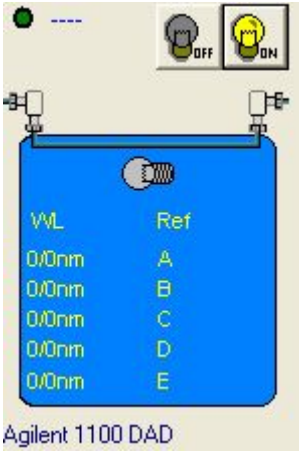
- *General*: displays the synopsis of the instrument, where some current values can be read (state of the instrument, wavelength and absorbance).

The

button switches on the detector lamp.

The

button switches off the detector lamp.



- *Not ready*: contains the not ready information sent by the instrument.

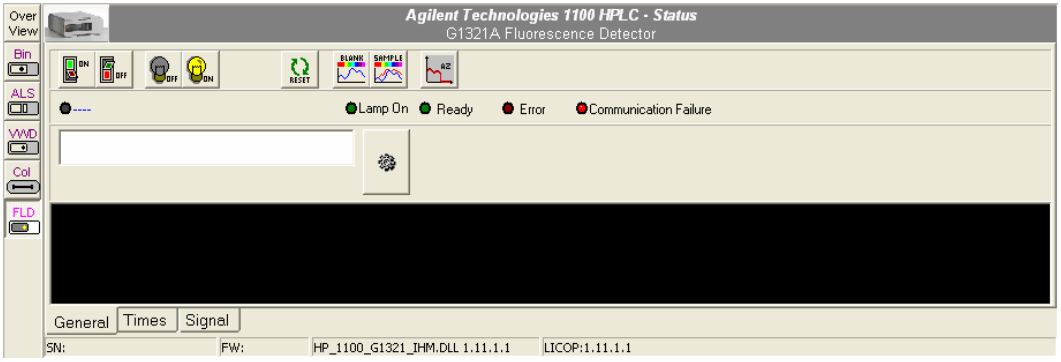
- *Events*: contains the events that have occurred on the instrument.

Status of the Agilent LC 1100 Fluorescence Detector (G1321)

Click on the

button to display the Agilent Technologies 1100 Fluorescence Detector (G1321) status screen. It contains four sub-sections: *General, Times, Signal* and *Overview*. Click on the required sub-section to display the corresponding screen.

General Window



This is a read-only window.

Information about the detector is displayed: Faults, not ready parameters, etc.

The

button turns on all the modules that compose the system.

The

button turns off all the modules that compose the system.

The

button switches on the detector lamp.

The

button switches off the detector lamp.

The

button reset the detector module.

The

button and

button enables to take spectra. *Blank* defines the spectrum as a baseline spectrum which will be automatically subtracted to the other spectra (*Sample* button).

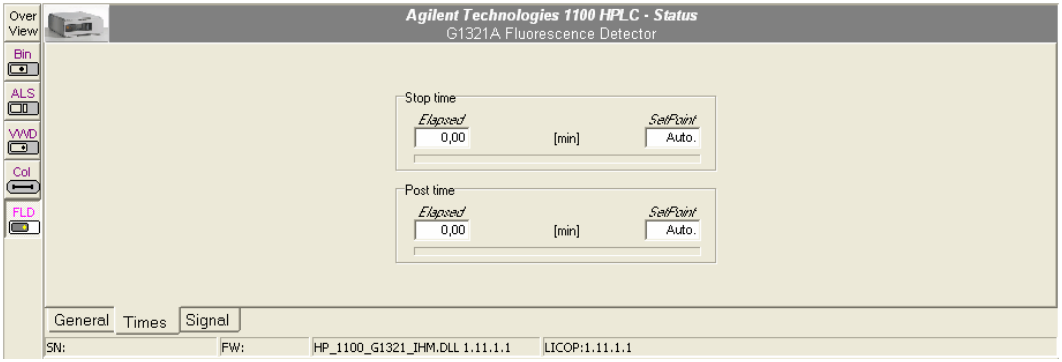
The

button autozeros the detector.

The LED's give information about the general status of the instrument: *Communication failure, Error, Ready, etc.*

The button and the corresponding date entry area are not active for this detector.

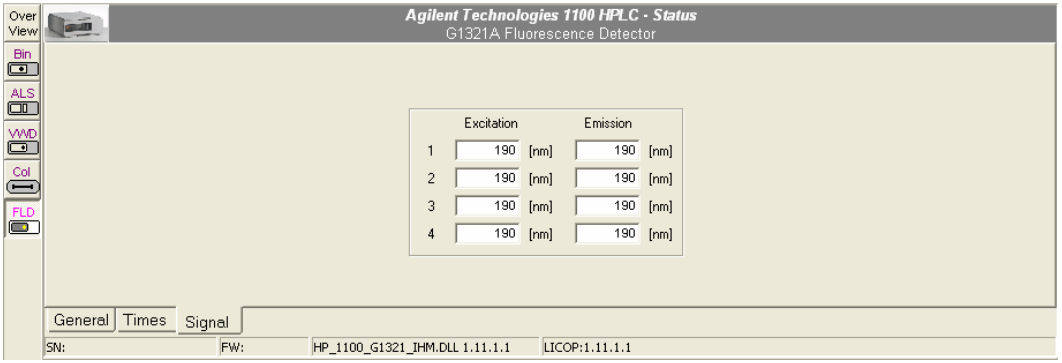
Times Window



This is a read-only window.

The elapsed run time and the elapsed post run time (if any) are displayed.

Signal Window



This is a read-only window.

The current *Excitation* and *Emission* wavelengths are displayed for each channel.

Overview Window

Click on the

button: the ***Status Overview*** window is displayed and contains three tabs:

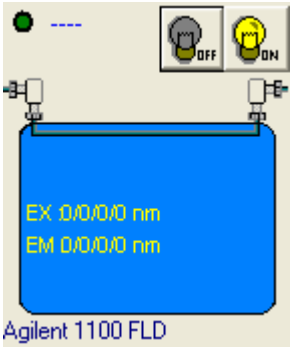
- *General*: displays the synopsis of the instrument, where some current values can be read (state of the instrument, wavelength and absorbance).

The

button switches on the detector lamp.

The

button switches off the detector lamp.



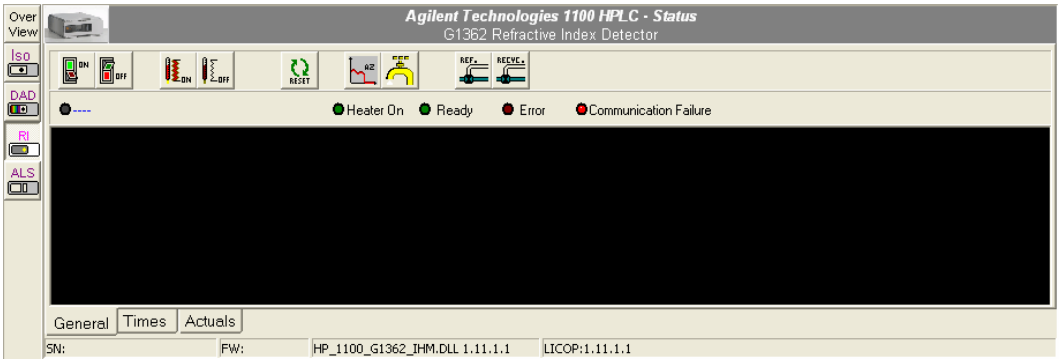
- *Not ready*: contains the not ready information sent by the instrument.
- *Events*: contains the events that have occurred on the instrument.

Status of the Agilent LC 1100 Refractive Index Detector (G1362)

Click on the

button to display the Agilent Technologies 1100 Refractive Index Detector (G1362) status screen. It contains four sub-sections: *General, Times, Actuals* and *Overview*. Click on the required sub-section to display the corresponding screen.

General Window



This is a read-only window.

Information about the detector is displayed: Faults, not ready parameters, etc.

This window allows direct control of the detector.

The button turns on all the modules that compose the system.

The button turns off all the modules that compose the system.

The button switches on the thermostat.

The button switches off the thermostat.

The button reset the detector module.

The button autozeros the detector.

The button switches on the purge valve.

The

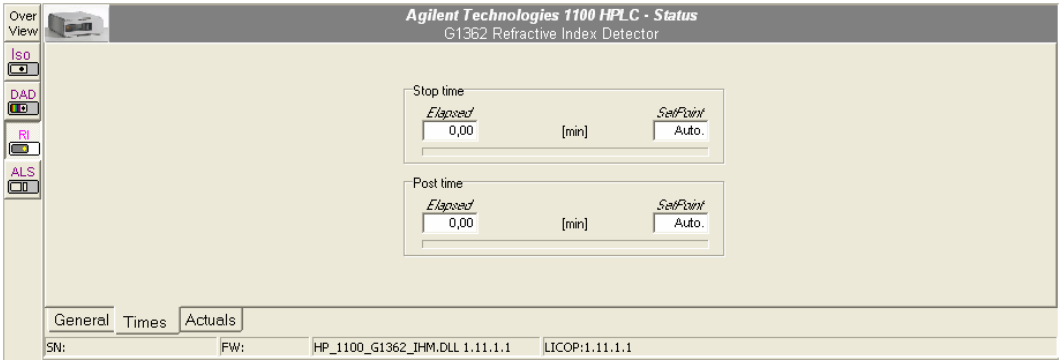
button displays the reference valve control parameters. The available valve positions are: *Sample cell only* and *Reference and sample cells.* This action can be infinite or can begin at a precise time.

The

button allows displaying the recycle valve control parameters. The available valve positions are: *Cell to waste* and *Cell to solvent reservoir.* This action can be infinite or can begin at a precise time.

The LED's give information about the general status of the instrument: *Communication failure, Error, Ready, etc.*

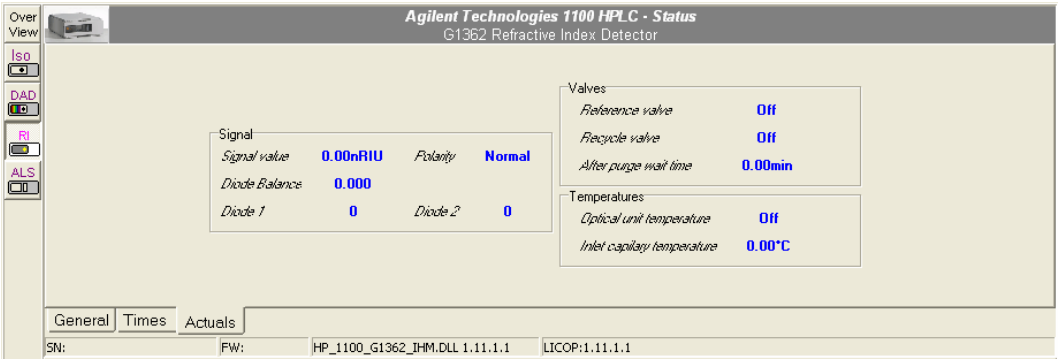
Times Window



This is a read-only window.

The elapsed run time and the elapsed post run time (if any) are displayed.

Actuals Window



This is a read-only window.

The current *Signal* parameters, the current *Valves* states and the major *Temperatures* are displayed.

Overview Window

Click on the

button: the ***Status Overview*** window is displayed and contains three tabs:

- *General*: displays the synopsis of the instrument, where some current values can be read (state of the instrument, wavelength and absorbance).

The

button switches on the thermostat.

The

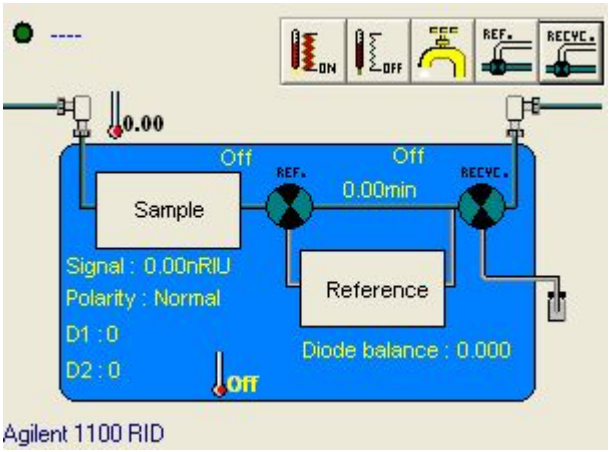
button switches off the thermostat.

The
button switches on the purge valve.

The

button displays the reference valve control parameters. The available valve positions are: *Sample cell only* and *Reference and sample cells.* This action can be infinite or can begin at a precise time.

The button allows displaying the recycle valve control parameters. The available valve positions are: *Cell to waste* and *Cell to solvent reservoir.* This action can be infinite or can begin at a precise time.



- *Not ready*: contains the not ready information sent by the instrument.
- *Events*: contains the events that have occurred on the instrument.

Running Instrument Maintenance Software

Performing Maintenance and Diagnosis

Run the separate Instrument maintenance software program. (You must have the right to run instrument maintenance software in the Galaxie profile under which you logged on.) Select the system to display the diagnosis screens. It is only possible to display the logbooks and the counters.

You must activate the maintenance mode to be able to modify counters and to perform maintenance and diagnosis actions. So this by right clicking on the instrument name and selecting *Maintenance On.*

Systems currently in maintenance mode are preceded by the tools symbol:

Diagnostic Section for the Agilent Technologies LC 1100 Modules

Maintenance of the Agilent LC 1100 Autosampler (G1313)

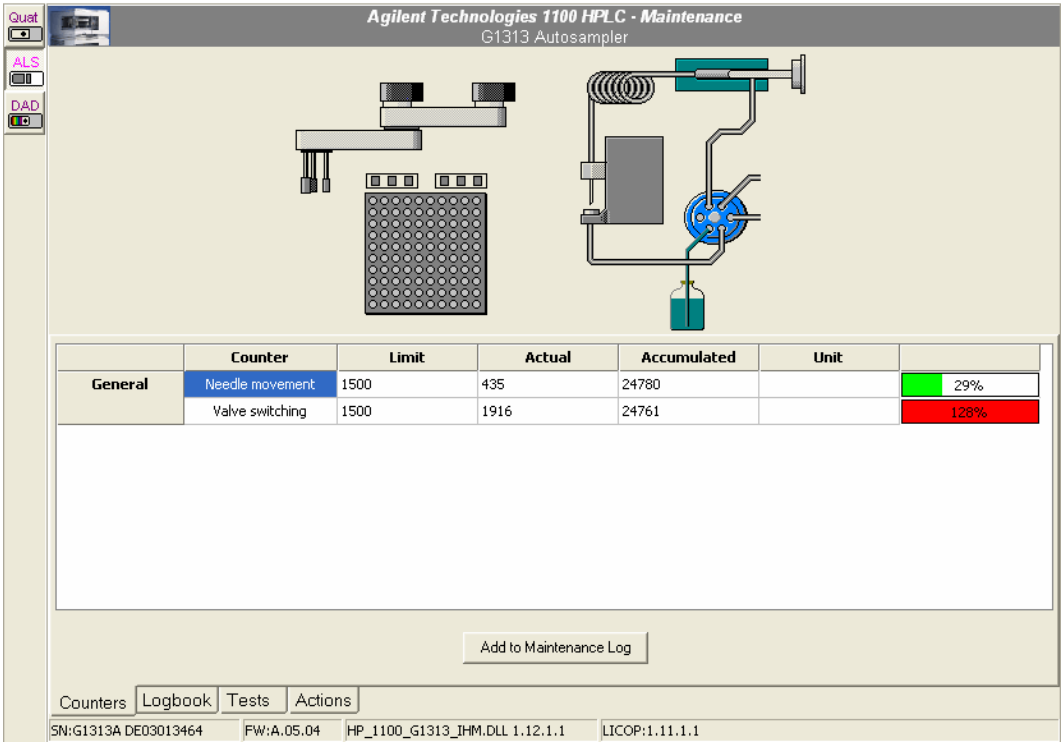
Click on the

button to display the Agilent Technologies 1100 Autosampler (G1313) diagnostic screen. It contains four sub-sections: *Counters, Logbook, Tests* and *Actions*. Click on the required sub-section to display the corresponding screen.

Counters Window

This window permits you to monitor the usage of two components of the autosampler which is schematized at the top of the counters tab.

The counters limits, actual and accumulated values are displayed in the counters table:



The *Limit* values correspond to the maximum allowed values for the counters before the maintenance is needed.

The *Actual* column displays the incremented counter value since the last reset of the counters.

In the *Limit* and *Actual* columns, select the current value and modify it. Validate by pressing the button.

The *Accumulated* values correspond to counter value since the first operation of the autosampler module.

At the right of the table, a visual illustration shows the usage of each counter. Below 75%, the usage is typified in green and above 75% in red to alert that maintenance will be required soon.

Each counter modification is automatically listed in the maintenance audit trail.

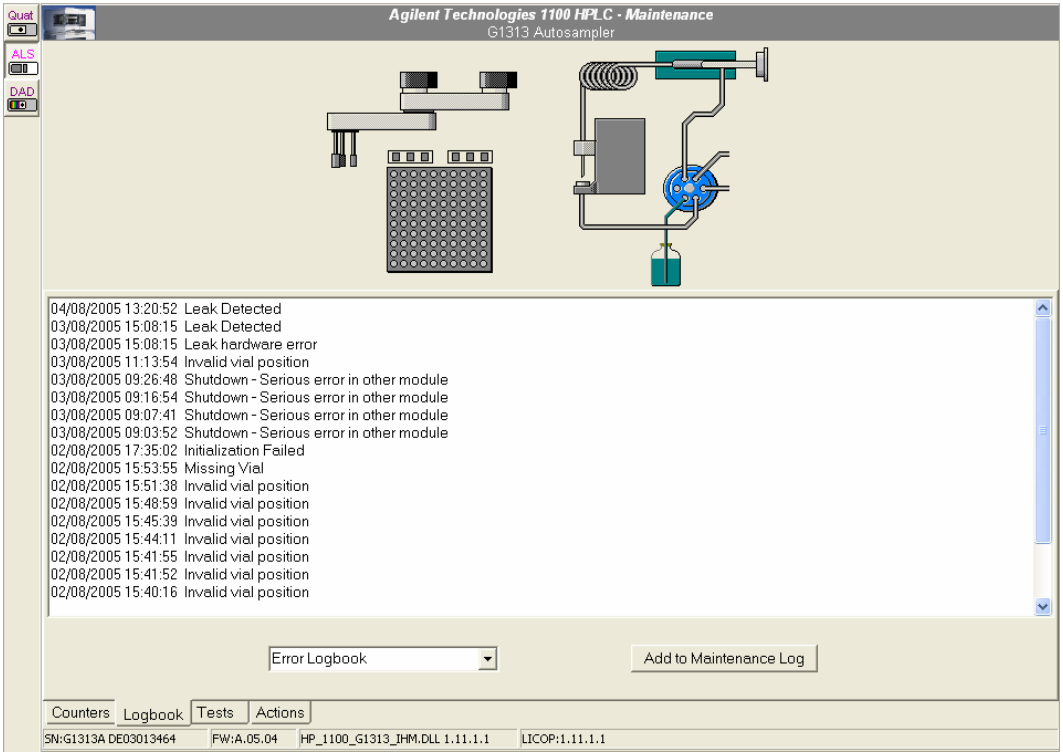
Press Add to Maintenance Log to add the current counters table in the maintenance audit trail.

Counters definition

Needle Movement: Total number of needle movements into the seat.

Valve switching: Total number of injection valve switches.

Logbook Window



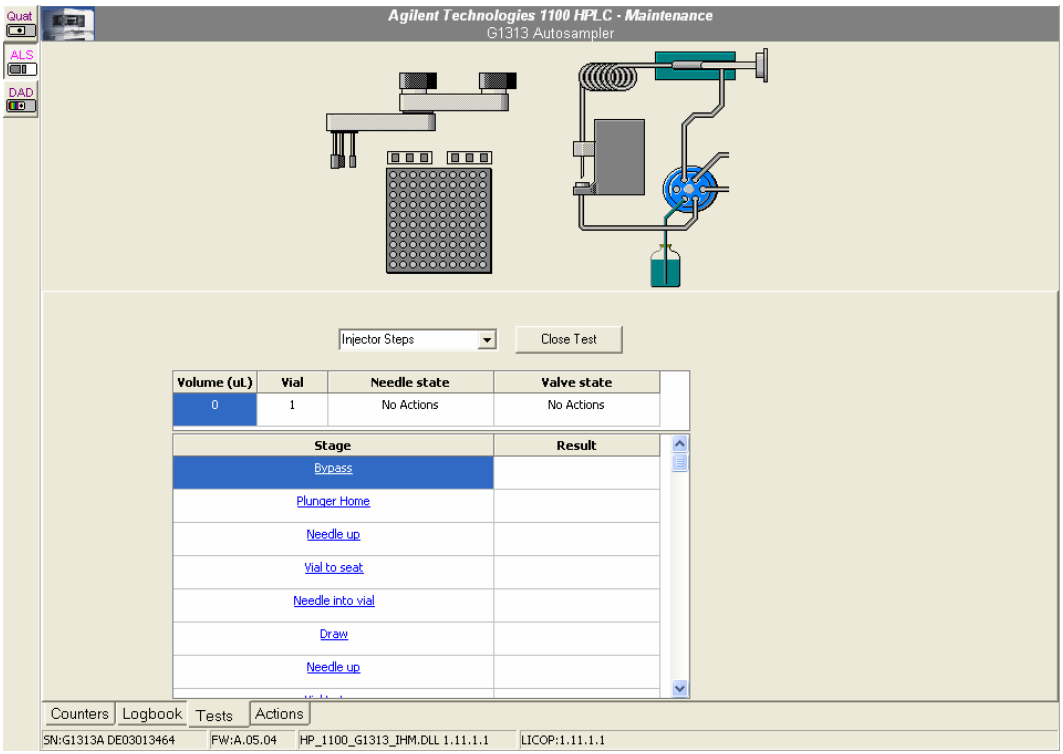
Select a logbook in the scrolling list. The available logbooks are:

Error logbook
State change history

Info event history
Limit event history
Error logbook of last analysis
State change history of last analysis
Info event history of last analysis
Limit event history of last analysis
Parameters changes during the last analysis
Run history
Maintenance history

Press Add to Maintenance Log to add the displayed logbooks in the maintenance audit trail.

Tests Window



Select a test in the scrolling list. *Injector Steps* and *Gripper Verification* tests are available.

To finish a test, click on the

button. The autosampler is then automatically re-initialized.

Injector steps test

Select *Injector Steps* to check separately the performance of each movement of the injection sequence.

Before performing the tests, enter the required *volume* and *vial* number in the table header.

The following injector test stages are available:

Bypass: switches injection valve to the bypass position.

Plunger home: Moves the plunger to the home position.

Needle up: Lifts the needle arm to the upper position.

Vial to seat: Moves the selected vial to the seat position.

Needle into vial: Lowers the needle into vial.

Draw: Device draws the defined injection volume.

Needle up: Lifts the needle out of the vial.

Vial to tray: Returns the selected vial to the tray position.

Needle into seat: Lowers the needle arm into the seat.

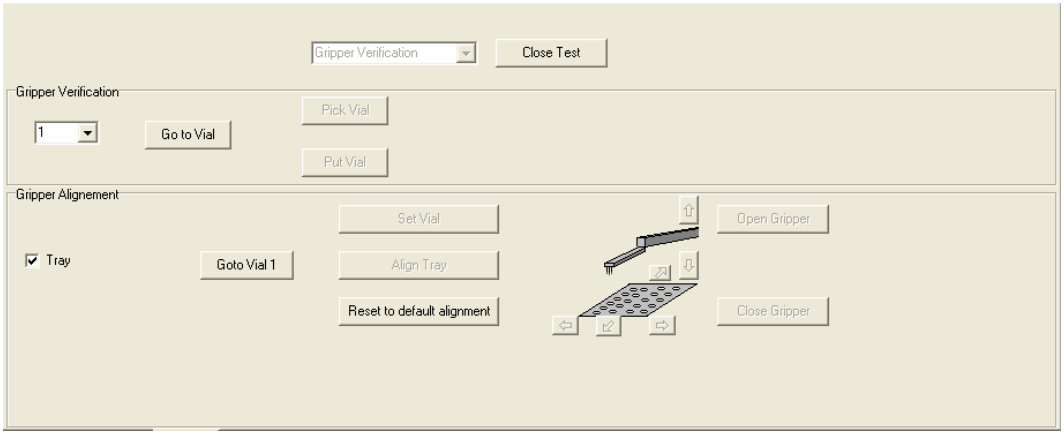
Mainpass: Switches the injection valve to the mainpass position.

Click on a stage to perform it. At the end of a stage, the test result is displayed in the corresponding column and the current needle and valve states are displayed in the table header. Results are also listed in the maintenance audit trail:

It is possible to perform only chosen stages and to perform them several times.

For analyzing the test results, refer to the autosampler operating manual.

Gripper Verification test



Gripper Verification

Run the *Gripper Verification* procedure to verify the gripper alignment is correct.

The test uses 4 vials position as reference positions. Select in the scrolling list the vial to check the position.

Press

to move the gripper arm to the vial position.

Press

to lift the vial from its position.

Press

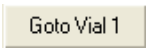
to replace the vial in the tray.

Repeat the procedure for the next vial.

Gripper Alignment

Perform a *Gripper Alignment* procedure if a misalignment is noticed during the *Gripper Verification* test. To correct all other vial positions within the tray, the *Gripper Alignment* procedure uses two vials position as reference points.

Check *Tray* to begin the realignment procedure.

Press 

to move the gripper arm to position of vial 1.

Press Close Gripper to close the gripper and move the fingers as close as possible to the top of the vial.

Use the arrows keys for correcting rotational, horizontal and vertical position.

Press Open Gripper to open the gripper and move it in such a way that the cap of the vial and rubber of gripper fingers have the same height.

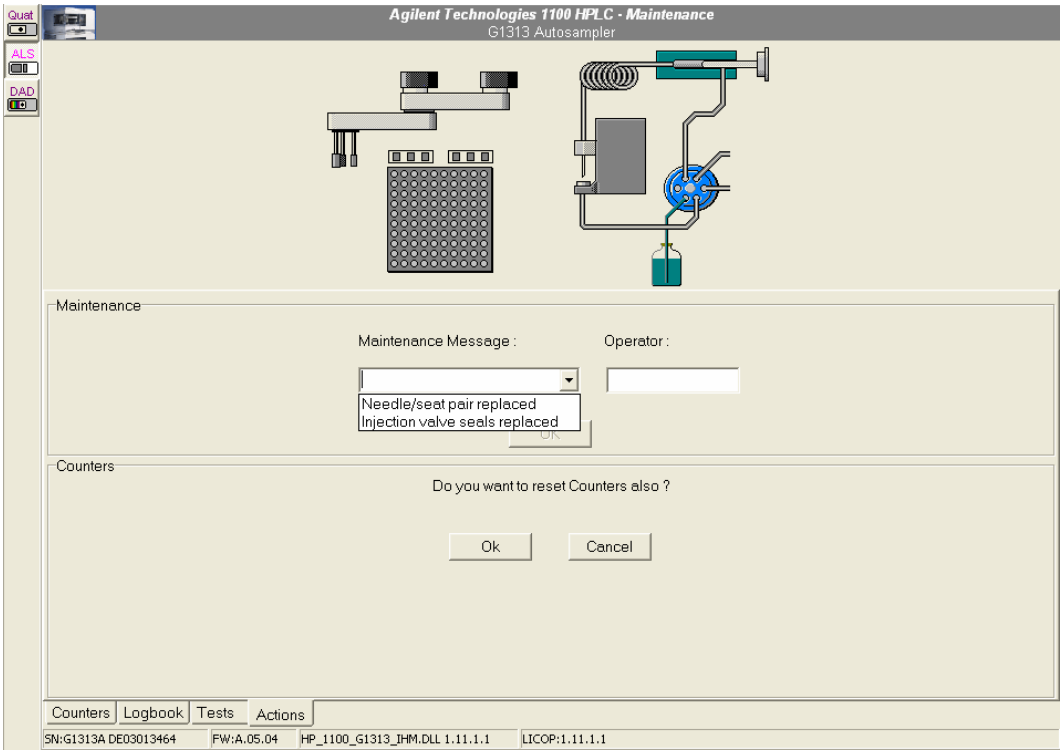
Press Set Vial to validate the new vial 1 position.

Press Goto Vial 81 and repeat the same steps to correct the vial 81 position. Once the vial 81 is aligned, press Set Vial.

Once vial 1 and 81 positions are corrected, press the Align Tray button to realign the tray. The new alignment is stored permanently and the module is reset.

Press Reset to default alignment during the procedure to cancel all correction and set previous alignment.

Actions Window



This window is used to list the autosampler maintenance actions.

Select the replaced component in the *Maintenance Message* scrolling list. Enter the *Operator* name and press the OK button.

The user is then automatically asked if he wants to reset the counters also.

Answer OK to set the corresponding counter actual value to zero or Cancel to not change the actual counter value.

The available choices are *Injection valve seals replaced* and *Needle/seat pair replaced.*

Once an action is performed, it is automatically listed in the maintenance audit trail.

Maintenance of the Agilent LC 1100 Quaternary pump (G1311)

Click on the

button to display the Agilent Technologies 1100 Quaternary Pump (G1311) diagnostic screen. It contains four sub-sections: *Counters, Logbook, Tests* and *Actions*. Click on the required sub-section to display the corresponding screen.

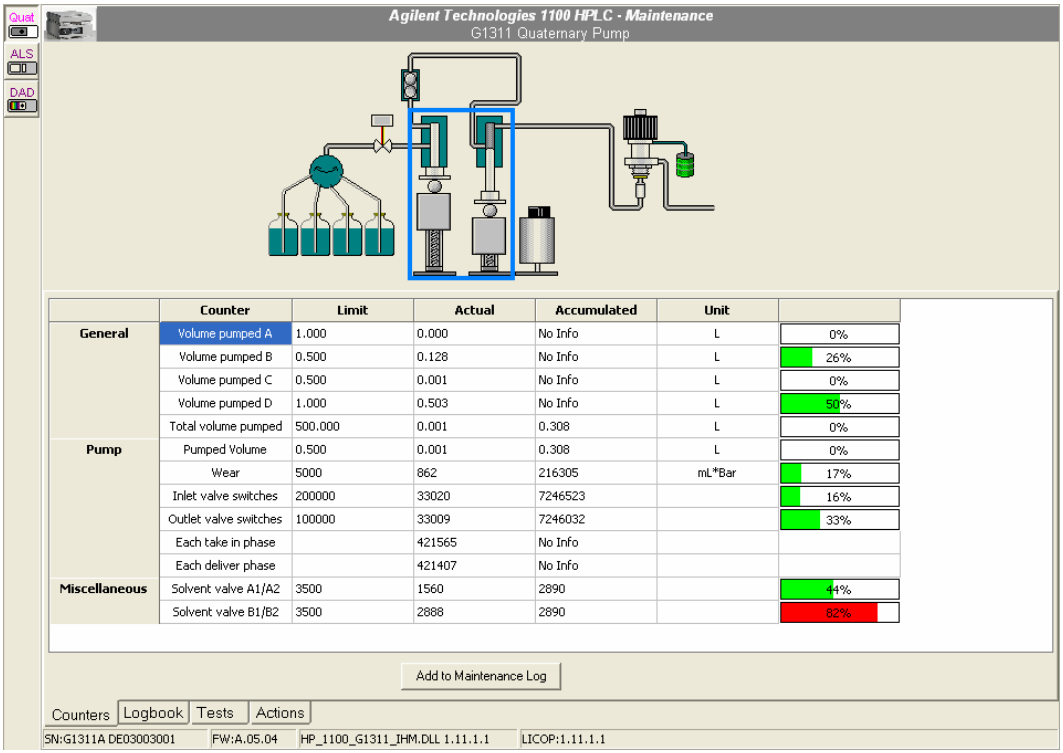
Counters Window

This window monitors the usage of several components of the quaternary pump module which is schematized at the top of the counters tab.

Two different counters tables are available: one for the pump components and another for the valves components. Click on the graphic to select either the pump or valve for display. A box will be highlighted around the displayed component.

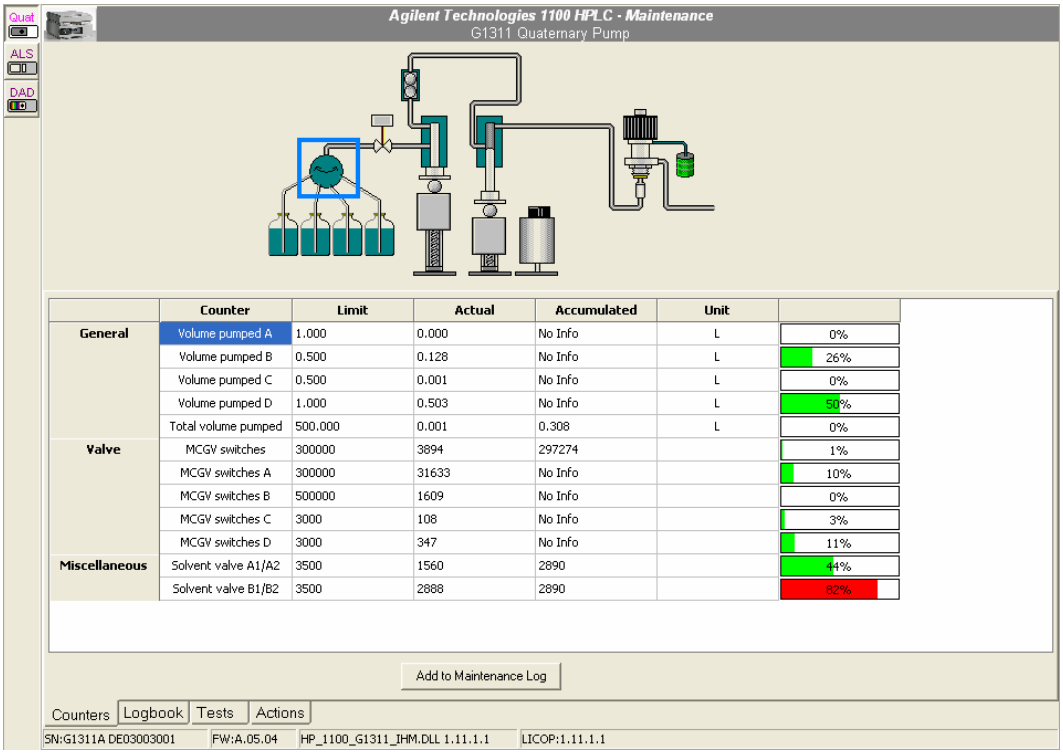
The *General* and *Miscellaneous* counters are identical for the pump and MCGV counters tables. The *Valve* counters are displayed only when selecting the MCGV in the module schema.

Select the pump in the module schema. The following counters limits, actual and accumulated values are displayed and the pump is bordered with a blue rectangle:



	Counter	Limit	Actual	Accumulated	Unit	
General	Volume pumped A	1.000	0.000	No Info	L	0%
	Volume pumped B	0.500	0.128	No Info	L	26%
	Volume pumped C	0.500	0.001	No Info	L	0%
	Volume pumped D	1.000	0.503	No Info	L	50%
	Total volume pumped	500.000	0.001	0.308	L	0%
Pump	Pumped Volume	0.500	0.001	0.308	L	0%
	Wear	5000	862	216305	mL*Bar	17%
	Inlet valve switches	200000	33020	7246523		16%
	Outlet valve switches	100000	33009	7246032		33%
	Each take in phase		421565	No Info		
	Each deliver phase		421407	No Info		
Miscellaneous	Solvent valve A1/A2	3500	1560	2890		44%
	Solvent valve B1/B2	3500	2888	2890		82%

Select the MCGV in the module schema. The following counters limits, actual and accumulated values are then displayed and the MCGV is bordered with a blue rectangle:



	Counter	Limit	Actual	Accumulated	Unit	
General	Volume pumped A	1.000	0.000	No Info	L	0%
	Volume pumped B	0.500	0.128	No Info	L	26%
	Volume pumped C	0.500	0.001	No Info	L	0%
	Volume pumped D	1.000	0.503	No Info	L	50%
	Total volume pumped	500.000	0.001	0.308	L	0%
Valve	MCGV switches	300000	3894	297274		1%
	MCGV switches A	300000	31633	No Info		10%
	MCGV switches B	500000	1609	No Info		0%
	MCGV switches C	3000	108	No Info		3%
	MCGV switches D	3000	347	No Info		11%
Miscellaneous	Solvent valve A1/A2	3500	1560	2890		44%
	Solvent valve B1/B2	3500	2888	2890		82%

The *Limit* values correspond to the maximum allowed values for the counters before the maintenance is needed.

The *Actual* column displays the incremented counter value since the last reset of the counters.

In the *Limit* and *Actual* columns, select the current value and modify it. Validate by pressing the button.

The counter values of the *Volume pumped A to D* cannot be modified. The *Limit* value corresponds to the last fill bottle volume. The *Actual* value is equal to the subtraction of the limit volume by the remaining volume in bottle.

The *Accumulated* values correspond to counter value since the first operation of the pump module.

At the right of the table, a visual illustration shows the usage of each counter. Below 75%, the usage is typified in green and above 75% in red to alert a maintenance will be required soon.

Each counter modification is automatically listed in the maintenance audit trail.

Press Add to Maintenance Log to add the current counters table in the maintenance audit trail.

Counters definition

Volume pumped A: total pumped volume of solvent A.

Volume pumped B: total pumped volume of solvent B.

Volume pumped C: total pumped volume of solvent C.

Volume pumped D: total pumped volume of solvent D.

Total Volume pumped: Sum of the pumped volume of each solvent channel.

Pumped volume: Total pumped volume. It is incremented by the stroke volume with each piston reversal.

Wear: The seal wear value is derived from system pressure and flow, is used as an indicator of seal wear in the pump head. The value increments continually with pump usage.

Inlet valve switches: total number of active-inlet valve switches. The value increments by one with each pump cycle.

Outlet valve switches: total number of outlet-valve switches. The value increments by one with each pump cycle.

Each take in phase: total number of times the plungers reached the take-in phase state.

Each deliver phase: total number of times the plungers reached the delivery phase state.

Solvent valve A1/A2: Total number of solvent selection valve A switches.

Solvent valve B1/B2: Total number of solvent selection valve B switches.

MCGV switches: Total number of interrupts for MCGV switches.

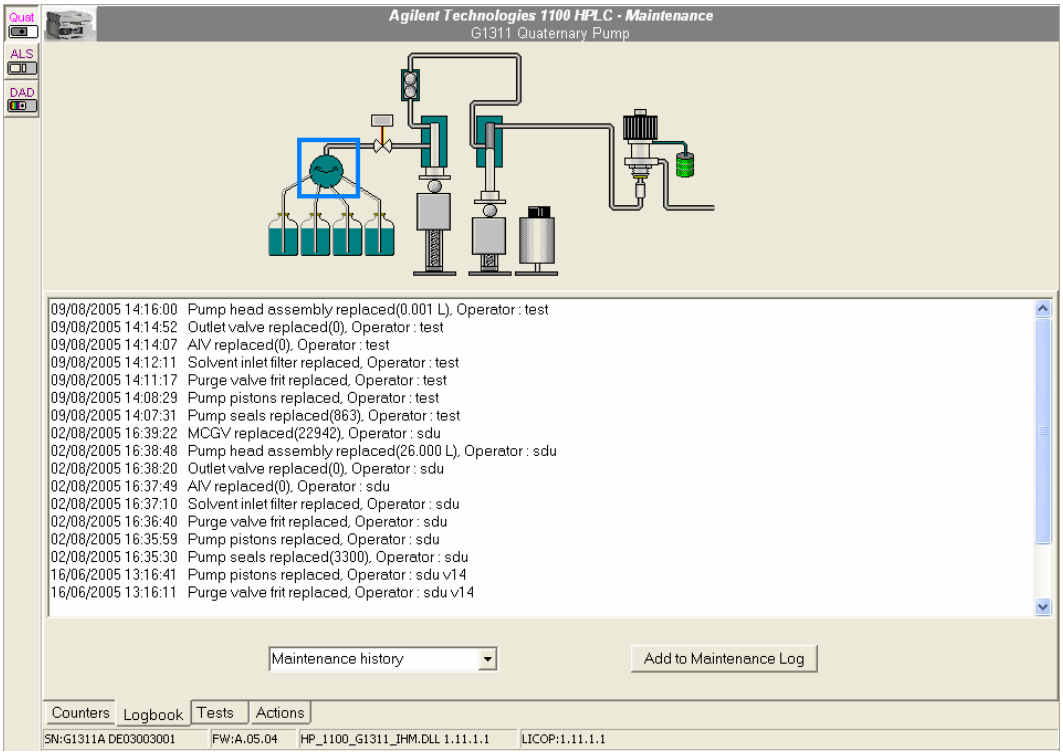
MCGV switches A: Total number of channel A valve switches.

MCGV switches B: Total number of channel B valve switches.

MCGV switches C: Total number of channel C valve switches.

MCGV switches D: Total number of channel D valve switches.

Logbook Window


Agilent Technologies 1100 HPLC - Maintenance
G1311 Quaternary Pump
Quat
ALS
DAD
09/08/2005 14:16:00 Pump head assembly replaced(0.001 L), Operator : test
09/08/2005 14:14:52 Outlet valve replaced(0), Operator : test
09/08/2005 14:14:07 AIV replaced(0), Operator : test
09/08/2005 14:12:11 Solvent inlet filter replaced, Operator : test
09/08/2005 14:11:17 Purge valve frit replaced, Operator : test
09/08/2005 14:08:29 Pump pistons replaced, Operator : test
09/08/2005 14:07:31 Pump seals replaced(863), Operator : test
02/08/2005 16:39:22 MCGV replaced(22942), Operator : sdu
02/08/2005 16:38:48 Pump head assembly replaced(26.000 L), Operator : sdu
02/08/2005 16:38:20 Outlet valve replaced(0), Operator : sdu
02/08/2005 16:37:49 AIV replaced(0), Operator : sdu
02/08/2005 16:37:10 Solvent inlet filter replaced, Operator : sdu
02/08/2005 16:36:40 Purge valve frit replaced, Operator : sdu
02/08/2005 16:35:59 Pump pistons replaced, Operator : sdu
02/08/2005 16:35:30 Pump seals replaced(3300), Operator : sdu
16/06/2005 13:16:41 Pump pistons replaced, Operator : sdu v14
16/06/2005 13:16:11 Purge valve frit replaced, Operator : sdu v14
Maintenance history
Add to Maintenance Log
Counters
Logbook
Tests
Actions
SN:G1311A DE03003001
FW:A.05.04
HP_1100_G1311_IHM.DLL 1.11.1.1
LICOP:1.11.1.1

Select in the scrolling list the logbook to display. The available logbooks are:

Error logbook
State change history
Info event history
Limit event history
Error logbook of last analysis
State change history of last analysis
Info event history of last analysis

Limit event history of last analysis
Parameters changes during the last analysis
Run history
Maintenance history

Press Add to Maintenance Log to add the displayed logbook in the maintenance audit trail.

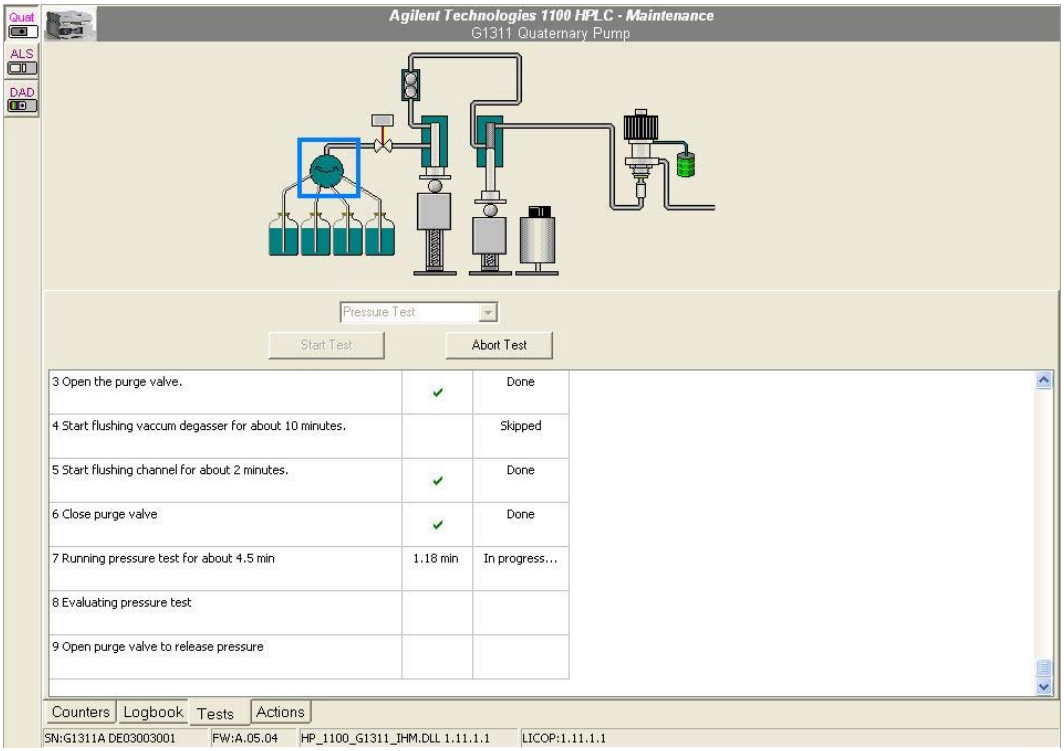
Tests Window

Select a test in the scrolling list and press Start Test to start the test. *Pressure Test* and *Leak Test* are available.

Follow the instructions and once a stage is done, press *Continue* or *Skip* in the status column.

It is possible to stop the test at any one stage by pressing the Abort Test button.

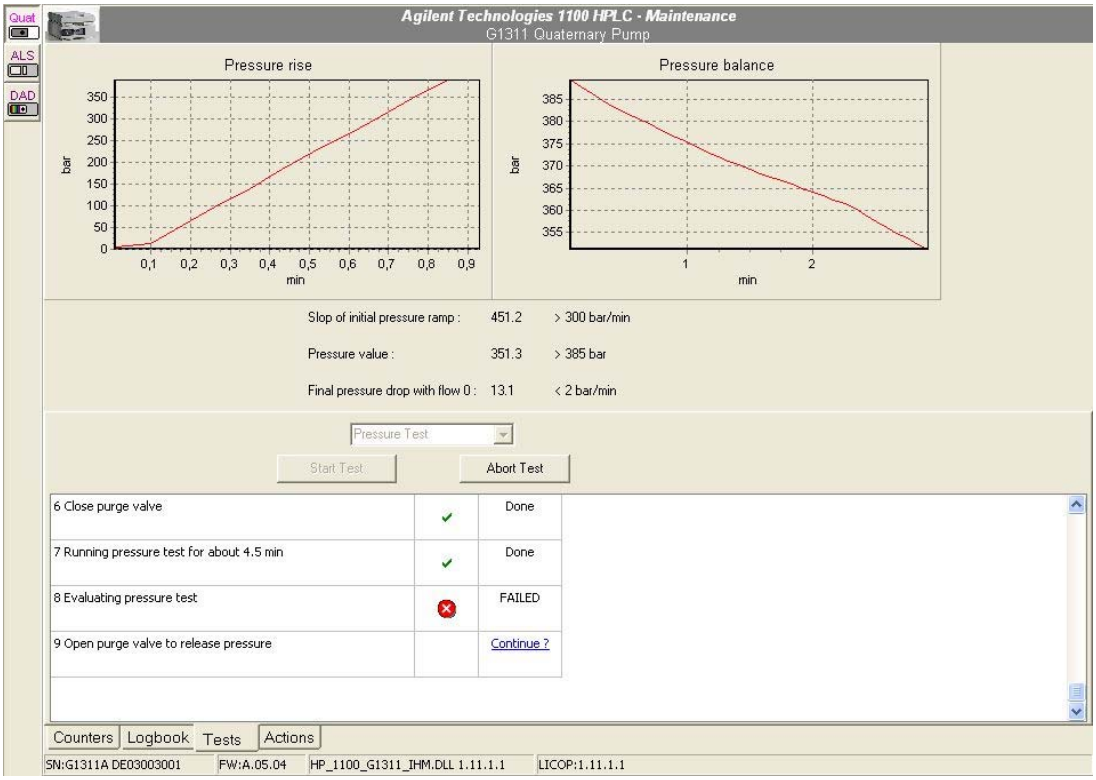
Pressure test



Perform the *Pressure Test* to demonstrate pressure–tightness up to 400 bars. The test consists in monitoring pressure profile while the pump is following defined stages.

After its initialization, the pump starts pumping isopropyl alcohol with a flow rate of 510µL/min and a stroke of 100 µL. When the system pressure reaches the 390s bar value, the pump switches off.

Once the pressure test is finished, results are displayed on screen and also in the maintenance audit trail:

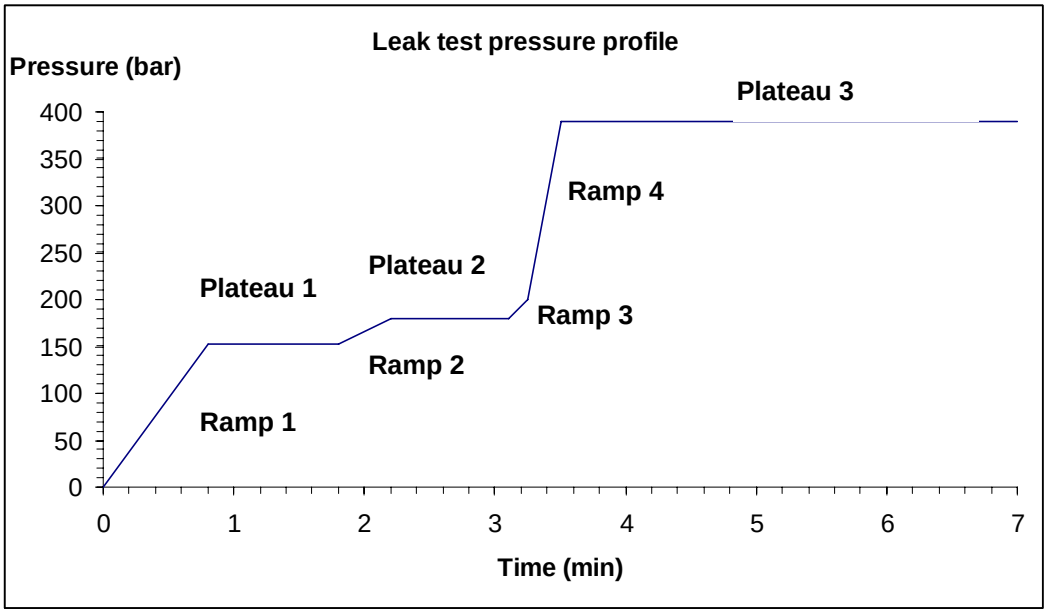


For analyzing the test results, refer to the pump operating manual.

Leak test

Run the *Leak Test* if the pump is the source of the leak.

The test consists in monitoring pressure profile while the pump is following defined stages, different from those of the pressure test:



Ramp 1: The pump is initialized and then plunger 1 delivers a 153 µL/min flow of isopropyl alcohol with a stroke length of 100 µL.

Plateau 1: Plunger 2 delivers a 2µL/min flow rate during 1 minute.

Ramp 2: Plunger 2 delivers a 153 µL/min flow and plunger 1 pumps to complete the second half of the ramp.

Plateau 2: Plunger 1 delivers a 2 µL/min flow for 1 minute.

Ramp 3: The stroke is changed to 100 µL and the flow is increased to 220 µL/min and then to 510 µL/min.

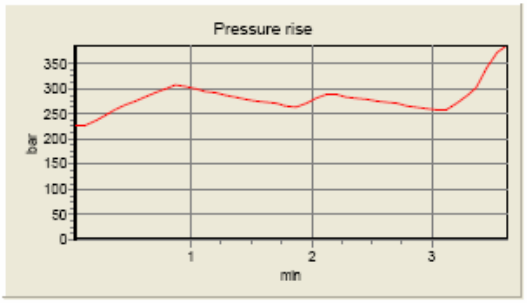
Ramp 4: The system reaches 390 bars and the flow is stopped.

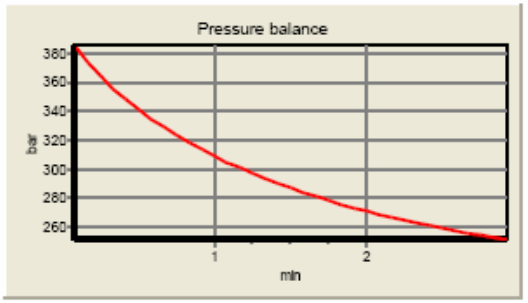
Plateau 3: The pressure drop should not exceed 2 bars/min.

The pressure should stay constant during the plateau and should increase linearly during the ramps.

Once the leak test is finished, results are displayed on screen and also in the maintenance audit trail:

Leak Test performed the 03/08/2005 at 10:04:18



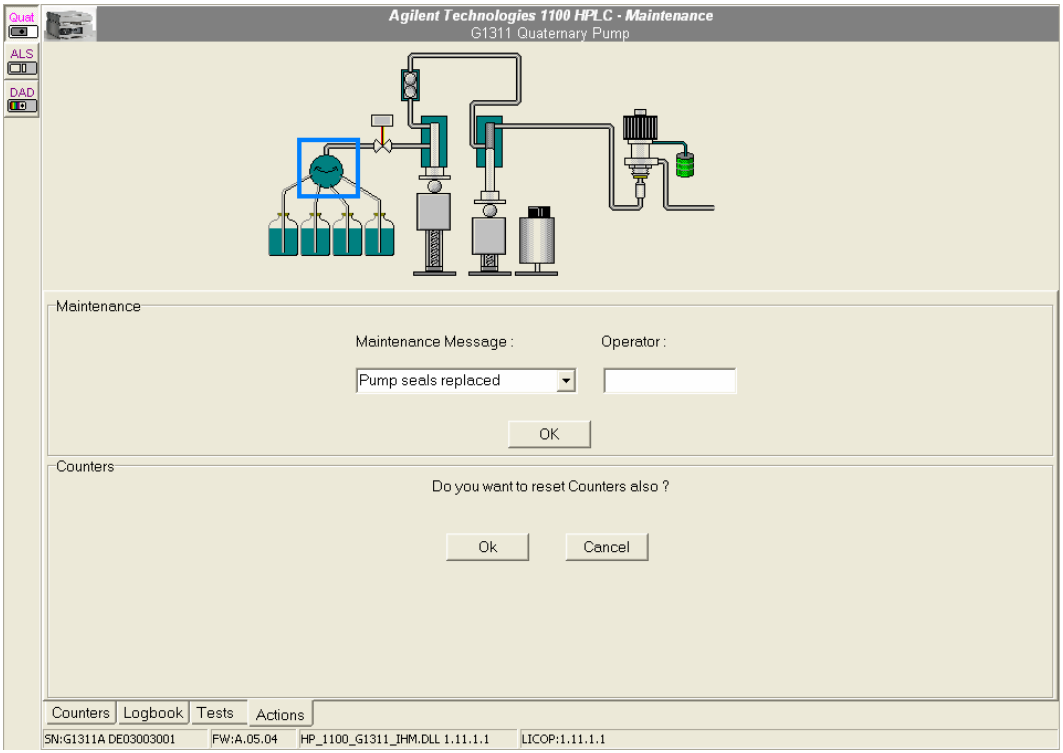


Test Result :

Test	Test values	Test limits	Test results
Pressure for the first plateau :	267.0	> 100 bar	Passed
Slope of the first plateau :	52.9	> 0 bar/min	Passed
Pressure for the second plateau :	259.1	> 140 bar	Passed
Slope for the second plateau :	65.4	> 0 bar/min	Passed
Pressure value :	249.4	> 385 bar	Failed
Final pressure drop with flow 0 :	46.7	< 2 bar/min	Failed

For analyzing the test results, refer to the pump operating manual.

Actions Window



This window is used to list the pump module maintenance actions.

Select the replaced component in the *Maintenance Message* scrolling list. Enter the *Operator* name and press the OK button.

The user is then automatically asked if he wants to reset the corresponding counters also.

Answer OK to set the corresponding counter actual value to zero or Cancel to not change the actual counter value.

The available choices are:

Pump seals replaced: Actual Wear and Pumped volume counters can be reset.

Pump pistons replaced: no outcome on counters.

Purge valve frit replaced: no outcome on counters

Solvent inlet filter replaced: no outcome on counters

AIV (Active Inlet Valve): Actual Inlet valve switches counters can be reset.

Outlet valve: Actual Inlet valve switches counters can be reset.

Pump head assembly: no outcome on counters

MCGV (Multi Channel gradient Valve) replaced: MCGV switches counters from A to D can be reset.

Once an action is performed, it is automatically listed in the maintenance audit trail.

Maintenance of the Agilent LC 1100 Diode Array Detector (G1315) and Multiple Wavelength Detector (G1365)

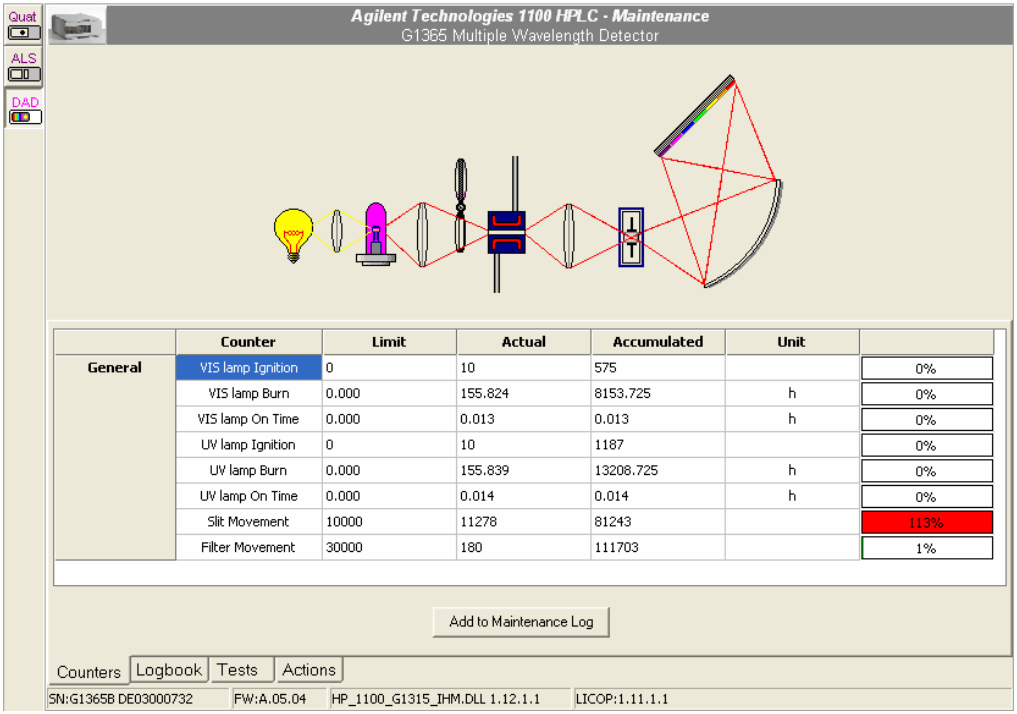
Click on the

button to display the Agilent Technologies 1100 Diode Array Detector (G1315) and Multiple Wavelength detector (G1365) diagnostic screen. It contains four sub-sections: *Counters, Logbook, Tests* and *Actions*. Click on the required sub-section to display the corresponding screen.

Counters Window

This window monitors the usage of several components of the detector module which is schematized at the top of the counters tab.

The following counter limits, actual and accumulated values are then displayed:



The *Limit* values correspond to the maximum allowed values for the counters before the maintenance is needed.

The *Actual* column displays the incremented counter value since the last reset of the counters.

In the *Limit* and *Actual* columns, select the current value and modify it. Validate by pressing the button.

The counter values of the *VIS lamp Ignition*, VIS lamp Burn, *UV lamp Ignition* and *UV lamp Burn* cannot be modified. The A*ctual* values are respectively equal to the *Lamp Ignition* and *Lamp On-Time* values displayed in the detector status.

The *Accumulated* values correspond to counter value since the first operation of the pump module.

At the right of the table, a visual illustration shows the usage of each counter. Below 75%, the usage is typified in green and above 75% in red to alert that maintenance will be required soon.

Each counter modification is automatically listed in the maintenance audit trail.

Press Add to Maintenance Log to add the current counters table in the maintenance audit trail.

Counters definition

VIS/UV Lamp Ignition: number of ignition of the lamps.

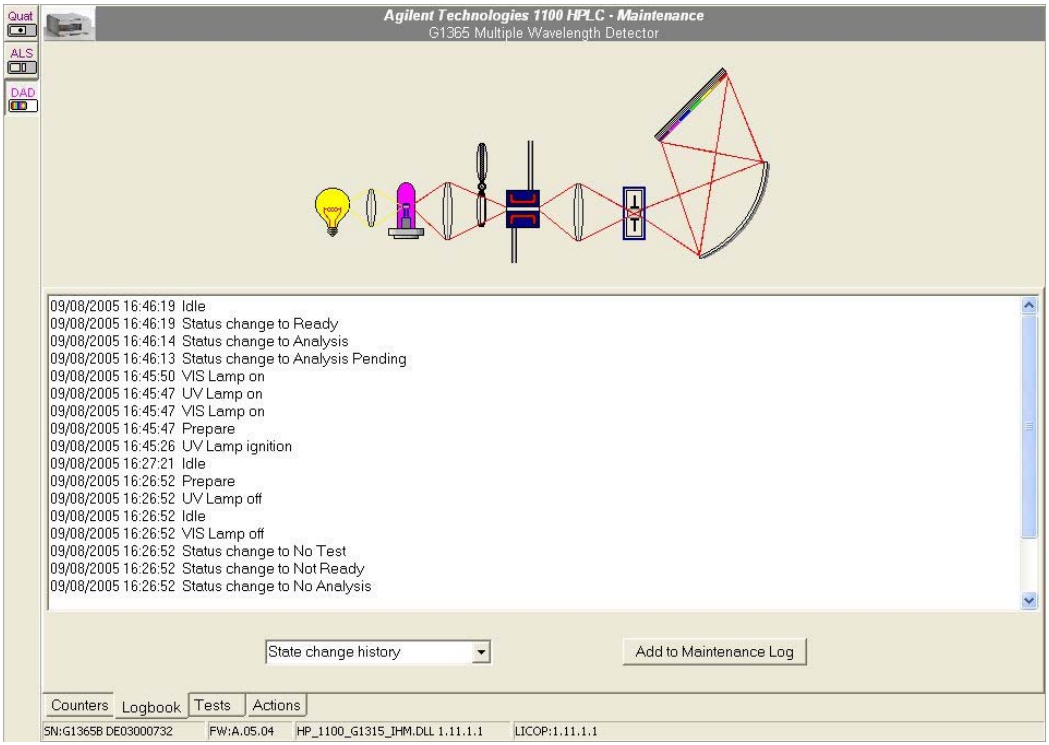
VIS/UV Lamp Burn: Tungsten/deuterium lamp total burn time.

VIS/UV Lamp On-time: Tungsten/deuterium lamp burn time since the last ignition.

Slit Movement: Number of movements of the slit assembly.

Filter Movement: Number of movements of the filter assembly.

Logbook Window



Select in the scrolling list the logbook to display. The available logbooks are:

Error logbook
State change history
Info event history
Limit event history
Error logbook of last analysis
State change history of last analysis
Info event history of last analysis
Limit event history of last analysis
Parameters changes during the last analysis
Run history
Maintenance history

Press Add to Maintenance Log to add the displayed logbook in the maintenance audit trail.

Tests Window

Select a test in the scrolling list and press Start Test to start the test. The available tests are:

Self-Test

Dark Current Test

Intensity Test

Holmium Test

Cell Test

Filter Test

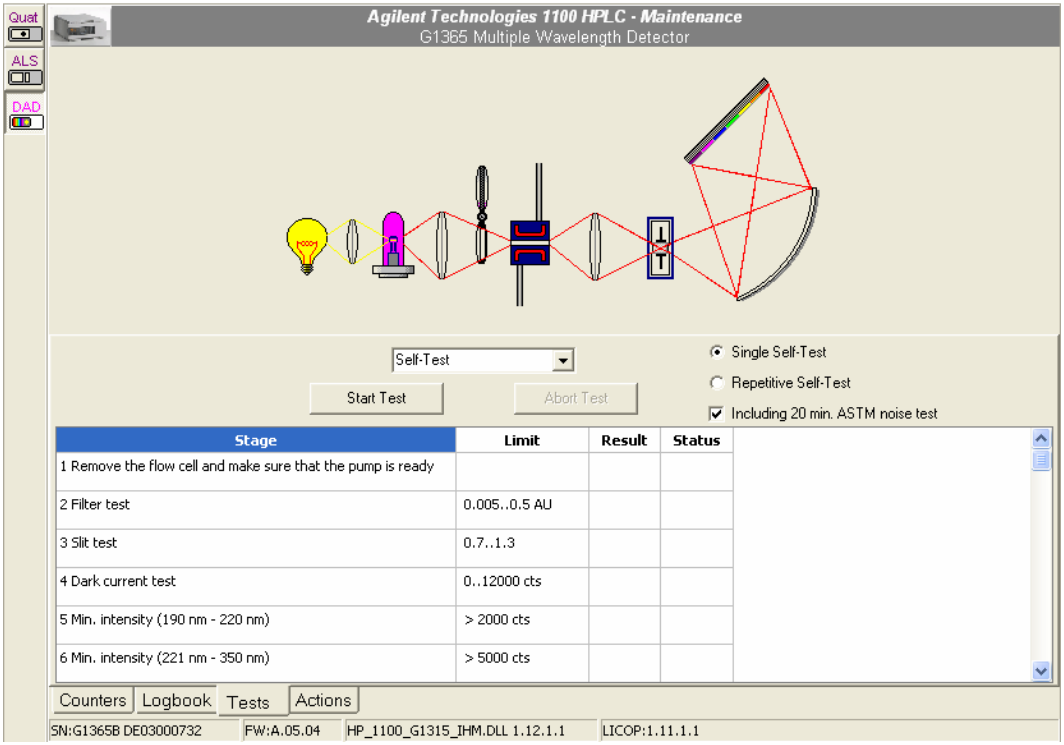
WL. Calibration Test

D/A Converter Test

Follow the instructions and once a stage is done, press *Continue* or *Skip* in the status column.

It is possible to stop the test at any one stage by pressing the Abort Test button.

Self-Test Test



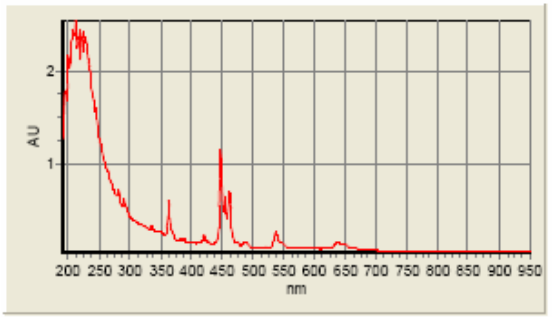
The *Self-Test* test consists in running the following individual tests consecutively: Filter Test, Slit Test, Dark Current Test, Wavelength Calibration test, Intensity test, Holmium Test, spectral flatness test and ASTM noise test if checked before starting the Self-test.

Select *Single Self-test* or *Repetitive Self-Test* to run the test once or repetitively. Note that if one of the tests fails for the first cycle, the second cycle will not be started.

The ASTM noise test determines the detector baseline noise (at 254 nm). It must be performed while pumping water at 1 mL/min.

Results are displayed at screen and also in the maintenance audit trail:

Self Test performed the 02/08/2005 at 09:57:52



Test Table :

Stage	Limit	Result	Status
1 Remove the flow cell and make sure that the pump is ready			Done
2 Filter test	0.005..0.5 AU	0.187	Passed
3 Slit test	0.7..1.3	0.909	Passed
4 Dark current test	0..12000 cts	2791..3237cts	Passed
5 Min. intensity (190 nm - 220 nm)	> 2000 cts	1186	Failed
6 Min. intensity (221 nm - 350 nm)	> 5000 cts	10251	Passed
7 Min. intensity (351 nm - 500 nm)	> 2000 cts	8453	Passed
8 Min. intensity (501 nm - 950 nm)	> 4000 cts	23139	Passed
9 Max. intensity (190 nm - 350 nm)	< 450000 cts	30359	Passed
10 Max. intensity (700 nm - 950 nm)	< 300000 cts	89020	Passed
11 Max. intensity (D2 alpha line)	< 1200000 cts	169581	Passed
12 Wavelength at 486.0 nm	485.5..486.5 nm	486.00	Passed
13 Wavelength at 656.1 nm	655.6..656.6 nm	656.09	Passed
14 Holmium test	-1..1 nm	-2.22	Failed
15 Spectral flatness	< 0.002 AU	0.0001	Passed

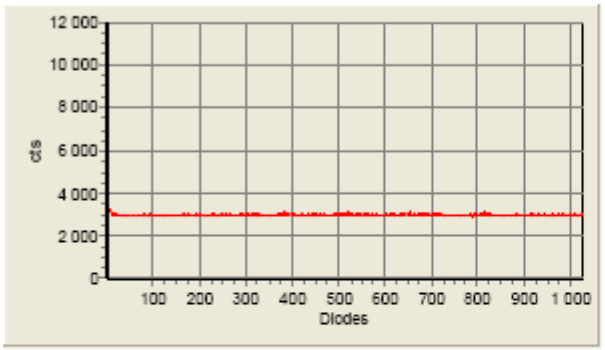
For analyzing the test results, refer to the detector operating manual.

Dark Current Test

Perform the *Dark Current* test to determine the leakage current from each optical diode. This leakage current may cause non-linearity or excessive noise at specific wavelengths.

When starting the test, the slit 1 nm assembly is moved to the dark position. At the end of the dark Current test, the resulting leakage current is measured and graphically displayed for each diode. Results are also listed in the maintenance audit trail:

Dark Test performed the 02/08/2005 at 10:01:44



Test Table :

Stage	Limit	Result	Status
1 Ensure that the flow cell has non absorbing solvent flowing.			Done
2 Dark current maximum value	<= 12000 cts	3284cts	Passed
3 Dark current minimum value	> 0 cts	2817cts	Passed

For analyzing the test results, refer to the detector operating manual.

Intensity Test

Perform the *Intensity* test to evaluate the performance of the lamps and optics. UV and VIS lamps Intensity are measured over the detector wavelengths range.

The test should be done with water in the flow cell.

When starting the test, the 1 nm slit is moved into the light path and the gain is set to zero. Four spectral ranges are used to evaluate the intensity spectrum. Results are displayed on screen and also listed in the maintenance audit trail:

Intensity Test performed the 02/08/2005 at 10:02:16

Test Table :

Stage	Limit	Result	Status
1 Ensure that the flow cell has non absorbing solvent flowing.			Done
2 Min. intensity (190 nm - 220 nm)	> 2000 cts	1186	Failed
3 Min. intensity (221 nm - 350 nm)	> 5000 cts	10251	Passed
4 Min. intensity (351 nm - 500 nm)	> 2000 cts	8453	Passed
5 Min. intensity (501 nm - 950 nm)	> 4000 cts	23139	Passed
6 Max. intensity (190 nm - 350 nm)	< 450000 cts	30359	Passed
7 Max. intensity (700 nm - 950 nm)	< 300000 cts	89020	Passed
8 Max. intensity (D2 alpha line)	< 1200000 cts	169581	Passed

For analyzing the test results, refer to the detector operating manual.

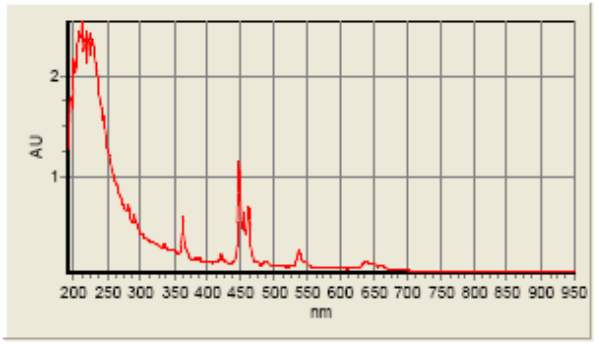
Holmium Test

Perform the *Holmium* test to verify wavelength accuracy. Three characteristic absorbance maxima of the holmium oxide filter are measured.

The test should be done with water in the flow cell.

When starting the test, the 1 nm slit is moved into the light path. Measured maxima are displayed on screen and also listed in the maintenance audit trail:

Holmium Test performed the 02/08/2005 at 10:11:35



Test Table :

Stage	Limit	Result	Status
1 Ensure that the flow cell has non absorbing solvent flowing.			Done
2 Wavelength 1 (361 nm)	360..362 nm	363.2	Failed
3 Wavelength 2 (453.7 nm)	452.7..454.7 nm	454.9	Failed
4 Wavelength 3 (536.7 nm)	535.7..537.7 nm	537.4	Passed

For analyzing the test results, refer to the detector operating manual.

Cell Test

Perform the *Cell* test to check whether the flow cell window is clean.

The deuterium and tungsten lamps intensity is measured over the detector wavelength range with the flow cell installed and with the flow cell removed.

The test should be done with water in the flow cell.

When starting the test, the 1 nm slit is moved into the light path and the gain is set to zero. The resulting intensity ratio represents the amount of light absorbed by the flow cell. It is displayed at screen and also listed in the maintenance audit trail:

Cell Test performed the 02/08/2005 at 10:15:01

Test Table :

Stage	Result	Status
1 Ensure that the flow cell has non absorbing solvent flowing.		Done
2 if cell not in place, install it		Done
3 Mesuring intensity with cell	44632	Done
4 Remove cell		Done
5 Mesuring intensity without cell	25615	Done
6 Calculating intensity ratio	1.74	Done

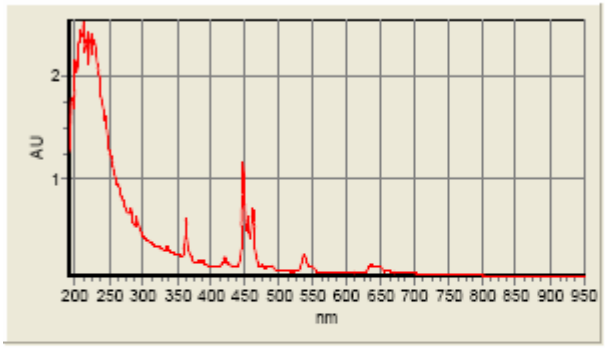
For analyzing the test results, refer to the detector operating manual.

Filter Test

Perform the *Filter* test to determine the if the filter is clean. During the test, the filter motor is moved in specific positions and the resulting absorbance of the holmium oxide filter is monitored.

During the filter movement, the absorbance maxima are measured and then graphically displayed at screen and in the maintenance audit trail:

Filter Test performed the 02/08/2005 at 10:17:40



Test Table :

Stage	Result	Status
1 Ensure that the flow cell has non absorbing solvent flowing.		Done
2 Mesuring and evaluating filter test result	0.177	Passed

For analyzing the test results, refer to the detector operating manual.

Wavelength Calibration Test

Perform the *Wavelength Calibration* test to check wavelength calibration.

During the test, the alpha (656.1 nm) and beta (486 nm) emission lines deviation of the deuterium lamp are evaluated.

The test should be done with water in the flow cell.

The 1 nm slit is moved into the light path and the gain is set to zero. The largest emission lines deviation is displayed.

At stage 6, choose to use this result to recalibrate the detector by clicking *Yes*. If the deviation is small, click on *No* to ignore the results.

At the end of the re-calibration, the largest emission lines deviation is evaluated again and displayed on screen and also in the maintenance audit trail:

Calibration Test performed the 02/08/2005 at 10:23:24

Test Table :

Stage	Result	Status
1 Ensure that the flow cell has non absorbing solvent flowing.		Done
2 Remove MWD flow cell		Done
3 Mesuring WL for beta-line (at 486.0 nm)	486.03	Done
4 Mesuring WL for alpha-line (at 656.1 nm)	656.10	Done
5 Evaluating largest deviation from center WL (nm)	0.03	Done
6 Do you want to recalibrate your detector ?		Done
7 Mesuring WL for beta-line (at 486.0 nm)	486.01	Done
8 Mesuring WL for alpha-line (at 656.1 nm)	656.10	Done
9 Evaluating largest deviation from center WL (nm)	0.01	Done

For analyzing the test results, refer to the detector operating manual.

D/A Converter Test

Perform the *D/A Converter* test to check correct operation of the digital-analog-converter.

During the test, a theoretical analog signal of approximately 52 mV with a square wave of 10µV and a frequency of 1 cycle / 48 seconds is applied to the digital-analog-converter (DAC).

The DAC signal must be plotted on an integrator at least 5 minutes in order to measure the amplitude and the peak-to-peak noise of the signal. The results are not directly provided by the Instrument Maintenance Software but by the integrator.

The following performed stages are displayed on screen and also in the maintenance audit trail:

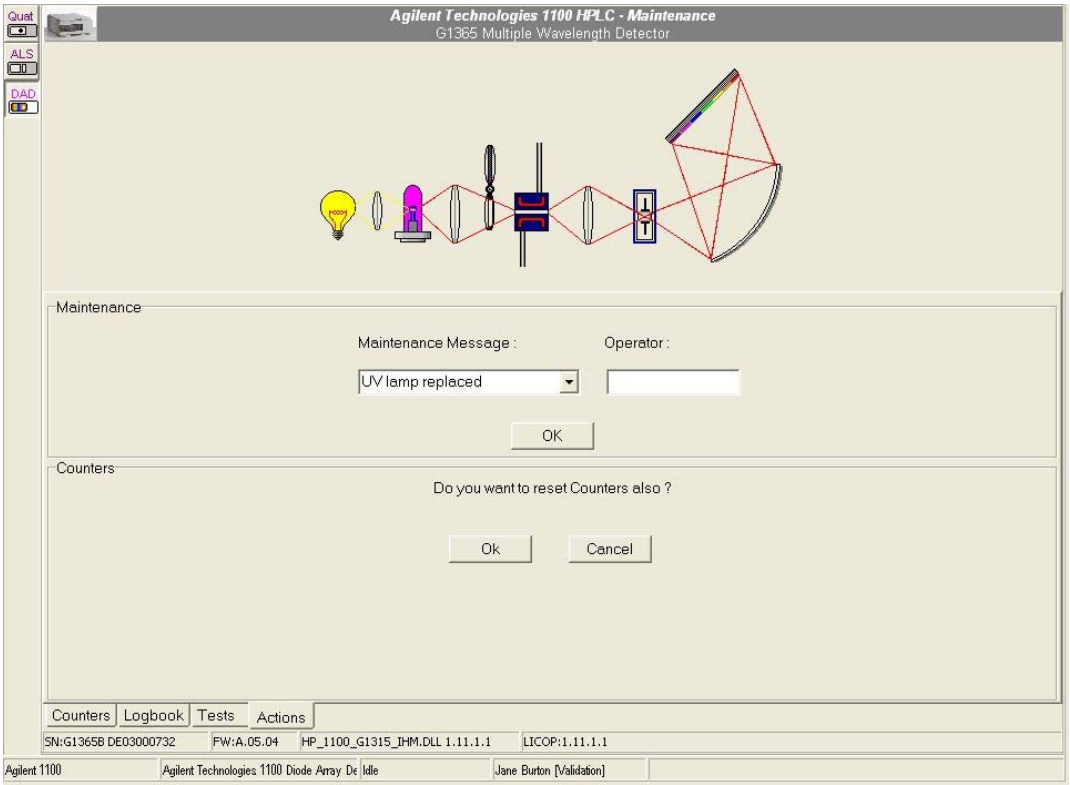
Converter Test performed the 10/08/2005 at 14:41:52

Test Table :

Stage	Result	Status
1 Ensure that the flow cell has non absorbing solvent flowing.		Done
2 Switch test signal to analog output	Test signal available	Done
3 Remove test signal from analog output	Test signal removed	Done

For analyzing the test results, refer to the detector operating manual.

Actions Window



This window is used to list the detector module maintenance actions.

Select the replaced component in the *Maintenance Message* scrolling list. Enter the *Operator* name and press the OK button.

The user is then automatically asked if he wants to reset the counters also.

Answer OK to set the corresponding counter actual value to zero or Cancel to not change the actual counter value.

The available choices are:

UV lamp replaced: UV lamp ignition, UV lamp Burn and UV lamp On Time counters can be reset.

VIS lamp replaced: Vis lamp ignition, Vis lamp Burn and Vis lamp On Time counters can be reset.

Filter assembly replaced: Filter movement counter can be reset.

Optical unit replaced: no outcome on counters

Once an action is performed, it is automatically listed in the maintenance audit trail.

Appendix

GPIB Addresses

The 1100 Master module connected to Galaxie with the GPIB cable must have a unique address between 0 and 31. Usually 21 is reserved for IEEE488 controller (GPIB card or 800 MIB with GPIB card).

The address is set with an 8 bit switch located on the rear panel of modules. Changing the position of these switches must be done with module switched-off.

The following table shows the switch positions for each GPIB address:

Address	Sw4	Sw5	Sw6	Sw7	Sw8
0	Down	Down	Down	Down	Down
1	Down	Down	Down	Down	Up
2	Down	Down	Down	Up	Down
3	Down	Down	Down	Up	Up
4	Down	Down	Up	Down	Down
5	Down	Down	Up	Down	Up
6	Down	Down	Up	Up	Down
7	Down	Down	Up	Up	Up
8	Down	Up	Down	Down	Down
9	Down	Up	Down	Down	Up

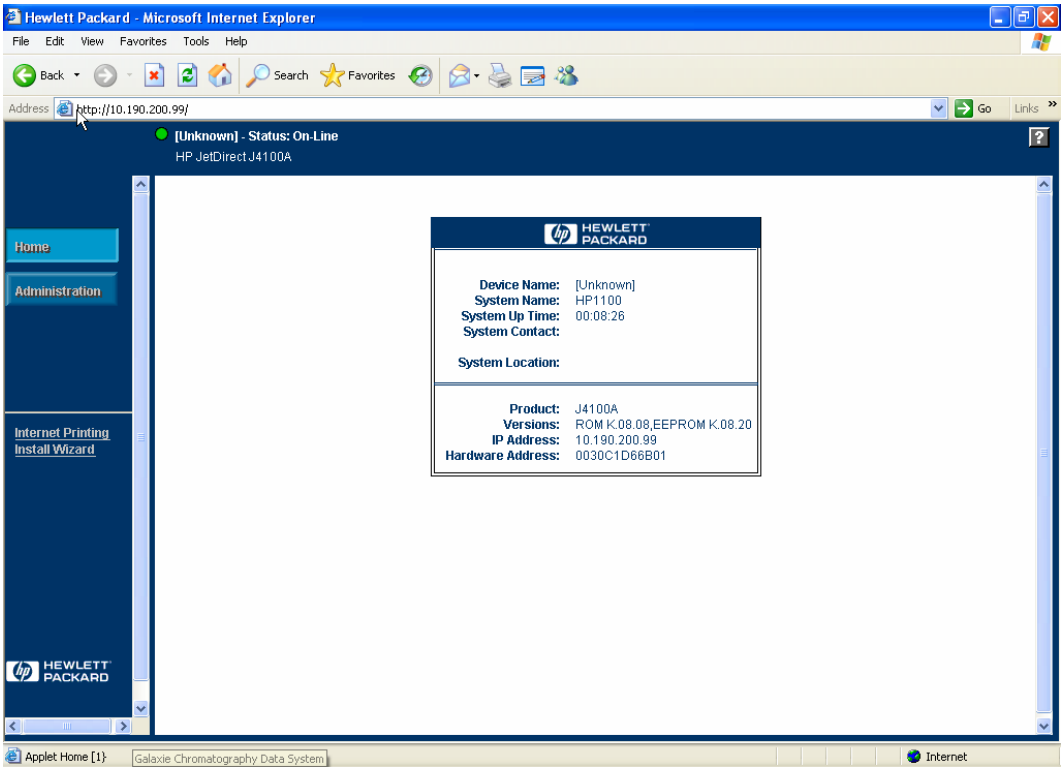
10	Down	Up	Down	Up	Down
11	Down	Up	Down	Up	Up
12	Down	Up	Up	Down	Down
13	Down	Up	Up	Down	Up
14	Down	Up	Up	Up	Down
15	Down	Up	Up	Up	Up
16	Up	Down	Down	Down	Down
17	Up	Down	Down	Down	Up
18	Up	Down	Down	Up	Down
19	Up	Down	Down	Up	Up
20	Up	Down	Up	Down	Down
21	Up	Down	Up	Down	Up
22	Up	Down	Up	Up	Down
23	Up	Down	Up	Up	Up
24	Up	Up	Down	Down	Down
25	Up	Up	Down	Down	Up
26	Up	Up	Down	Up	Down
27	Up	Up	Down	Up	Up
28	Up	Up	Up	Down	Down
29	Up	Up	Up	Down	Up
30	Up	Up	Up	Up	Down
31	Up	Up	Up	Up	Up

Configuring a Fixed IP Address

This appendix describes how to fix the IP address in the Agilent 1100 HPLC chain.

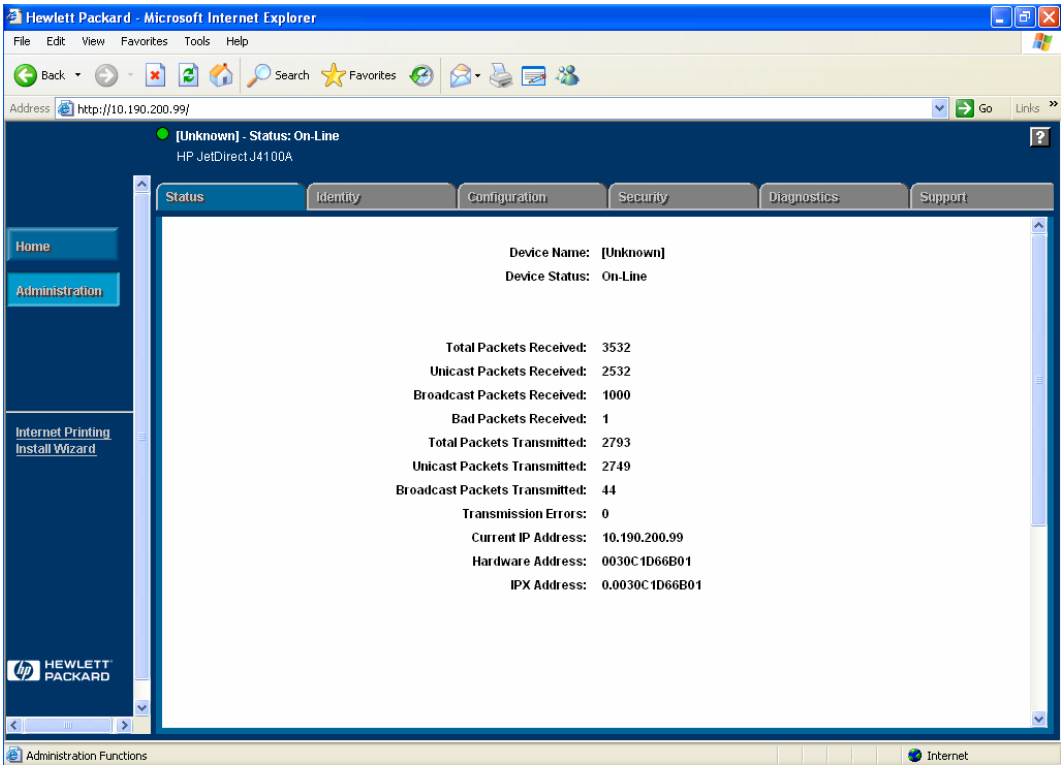
1. The Agilent 1100 HPLC must have been given a valid IP address via the BOOTP server.

2. In a web browser (Internet explorer for example) from the Acquisition server, type the IP address of the HPLC chain, in the address field. If the Internet browser is configured with a proxy server, it is mandatory to enter the IP address of the HPLC chain in the exceptions list. The following screen will be displayed.

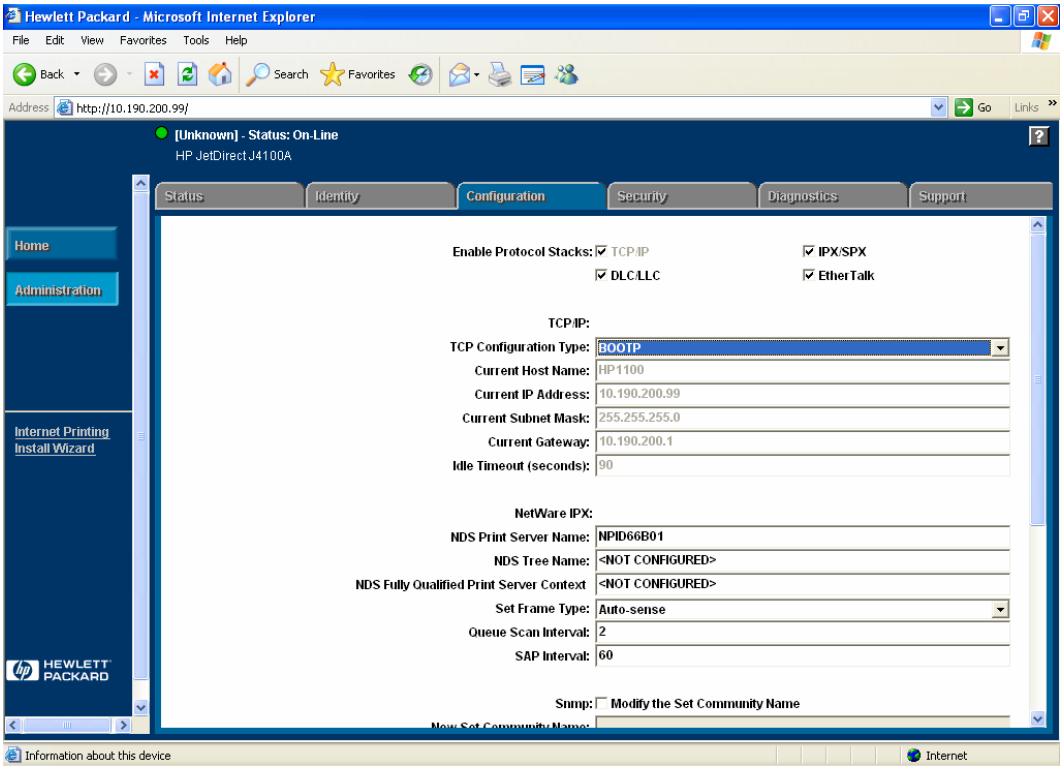


3. Click on the

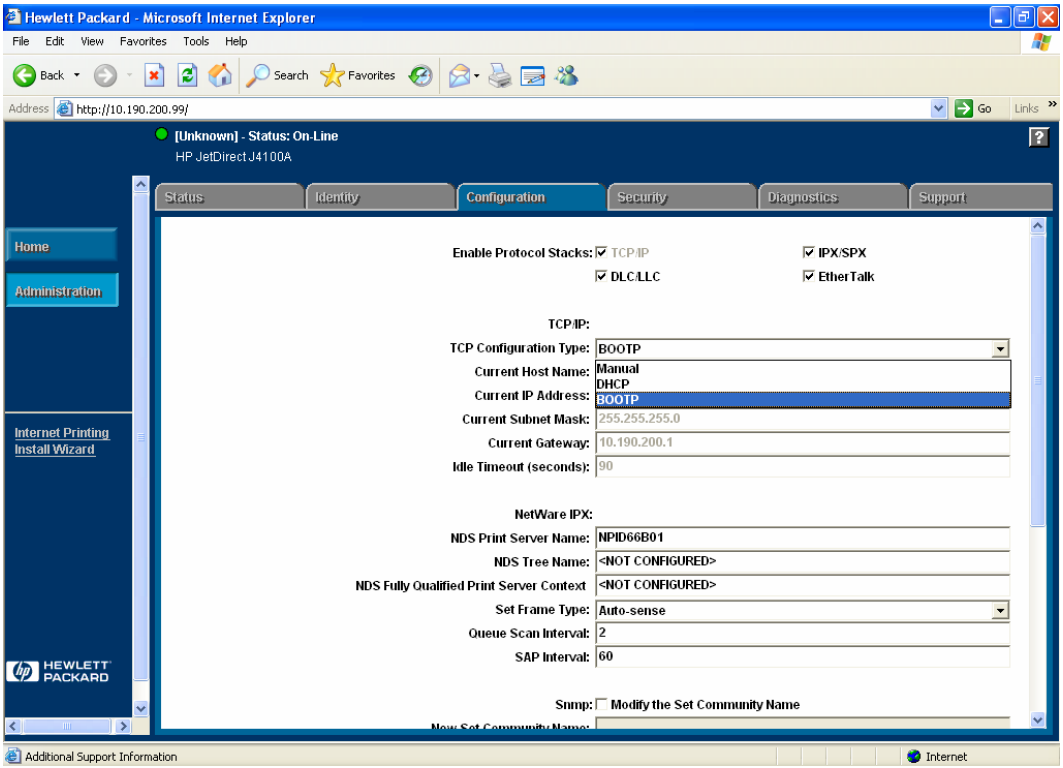
button on the left of the screen.



4. Click on the Configuration tab.

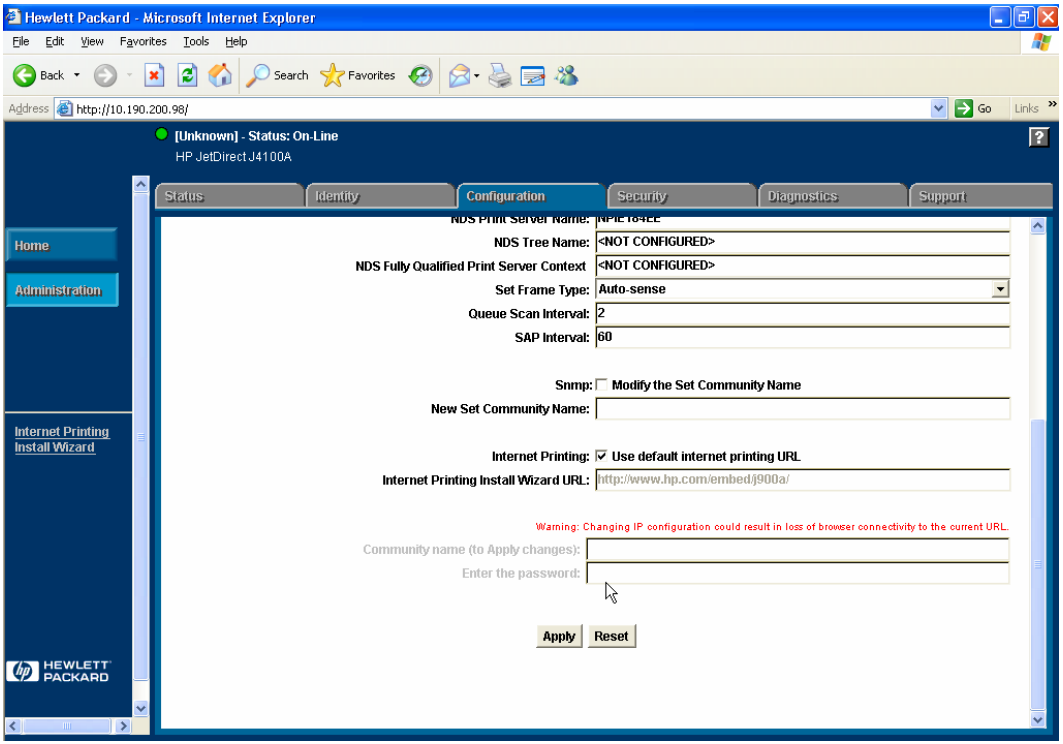


5. Select Manual in the *TCP Configuration Type* dropdown list.



6. Type the desired IP address, subnet mask and Gateway in the corresponding fields.

7. Finally, scroll down to the bottom of the screen and press the Apply button.


Hewlett Packard - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address http://10.190.200.98/
Go Links
[Unknown] - Status: On-Line
HP JetDirect J4100A
Status Identity Configuration Security Diagnostics Support
Home
Administration
Internet Printing Install Wizard
NDS Tree Name: <NOT CONFIGURED>
NDS Fully Qualified Print Server Context <NOT CONFIGURED>
Set Frame Type: Auto-sense
Queue Scan Interval: 2
SAP Interval: 60
Snmp: Modify the Set Community Name
New Set Community Name:
Internet Printing: Use default internet printing URL
Internet Printing Install Wizard URL: http://www.hp.com/embed/j900a/
Warning: Changing IP configuration could result in loss of browser connectivity to the current URL.
Community name (to Apply changes):
Enter the password:
Apply Reset
HEWLETT PACKARD

8. Reboot the HPLC chain.